HARVARD BUSINESS REVIEW

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AND COMMERCE
ALL THINGS ARE
BECOME NEW"

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VOLUME I NUMBER 4 JULY 1923 PRICE $1.25 A COPY

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The Farmers' Loan and Trust Company

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HARVARD BUSINESS REVIEW

JULY
1923

VOLUME I
NUMBER 4

THE CONTROL OF AN INDUSTRY IN THE BUSINESS CYCLE

By HOWARD COONLEY

HUMAN nature decrees that every executive shall believe his business to be surrounded by more difficulties and intricacies than could possibly exist in any other enterprise. Claiming no exception to the human rule, I am confident there is no more delicate problem of production and inventory control than that of the Walworth Manufacturing Company. As producers of pipe fittings, valves and tools made of cast iron, malleable iron, brass and steel, we are required to have ready for shipment at any time something over 23,000 different finished articles. In terms of completed parts this means several times that number of items.

Our product goes to the building trades, to manufacturing plants, to the railroads, shipbuilders, oil fields, and in fact to every line of activity, in quantity. Although new construction of buildings and equipment of all kinds plays a large part in our demand, by far the greatest tonnage is used in repair work, and therefore we are unusually subject to the necessities of quick delivery. We distribute this product, approximately 50,000 tons of finished material, through six of our own branches located in the largest distributing centers and through large jobbing and manufacturing customers.

We have two factories, one in South Boston which produces under normal conditions something over 1,000 tons of finished goods a month, and in Kewanee, Illinois, a larger unit producing normally something over 3,000 tons monthly. South Boston Works ships to the territory east of the Alleghenies and to our export customers; Kewanee Works covers the territory from the Alleghenies to the Pacific Coast. In general, the assortment of material produced at both plants is approximately the same.

At the time of my becoming president, the Walworth Manufacturing Company in 1913 had only one plant located in South Boston and their sales

were approximately 15% of our present volume. Since the number of items which they were producing and storing was the same as at present, their production and inventory problem was fully as difficult. The methods used in ordering material were characteristic of those followed generally at that time—namely, to give a blanket manufacturing order to the superintendent when a shortage occurred and leave to his off-hand decision the determination of the quantity to produce. There was available no background of records on which to predicate a planning system. Figures showing the company's condition were available only once a year. No estimate was possible of the current monthly profits and there was no classification of the product.

I. Development of Cost Accounting

Realizing the vital necessity of a more definite system of accounts to make possible an accurate method of control, we determined as a first step to divide our product into major classes and to use this classification in all our accounting. As a second step we decided to reconstruct our sales and production records over as long a period as was practical, and to use this information as a basis for a budgetary system. The necessities of the war and the changes in the company's activities delayed the time at which our budgetary system could be started and it was not until the year 1922 that we obtained the full advantage of control methods which are now a permanent and basic part of this company's policy.

For purposes of both accounting and production control, we had decided to divide our product into 15 groups and to break these groups down into 38 classes. From the time materials are put into production to the time they are billed to our customers, these classifications are maintained. By use of these classifications through the summary accounting records, we can follow the movement of goods, through raw material and work in process, until they have passed out of our control into the market. The simplicity of such a cost accounting system is one of the great aids to interpretation of the productive processes going on within the company.

II. Changes in Organization

While this simple cost accounting system was thus being developed, there was also in progress a simplification of the organization. It was not an easy matter at first to define clearly the functions of the major executives. Of course, as is the case with many companies who first approach such a problem in organization, it is found that many persons are attempting to do the work which others feel should come within their jurisdiction. Lack of definition is bound to bring about much overlapping of duties. When this overlapping was eliminated from the major functions, we arrived at an organization showing three line vice-presidents —one in charge of production, one in charge of sales, and a third vice-president in charge of all administrative functions. And since our business has many technical aspects, a fourth vice-president in staff capacity heads up all functions pertaining to engineering. There are also, of course, the other usual corporation officers — secretary and treasurer. Therefore, six officers in contact with the president's office assume control of all branches of the business, each being given full authority

in the direction of all activities within his control, and being held responsible for financial results, which our revised accounting system makes it possible to segregate.

It was naturally necessary in turn to break down the activities coming within the jurisdiction of each of these vice-presidents, so that every subordinate would know his authority and responsibility. The major executives under the Vice-President in Charge of Production, for instance, are the Boston Works Manager and the Kewanee Works Manager. Under each of these managers is a complete but distinct organization, and the accounting system is arranged to correspond with the authority of these officers. Each works has its own accounting records based upon the division into 15 groups and 38 classes, so that we may check costs and efficiencies between the two works on a comparable basis.

This plan of organization and the development of an adequate cost accounting system had but one ultimate end in view. The company, which was developing rapidly, must for control purposes be just as easy to comprehend as the original smaller organization. Responsibilities must be so clearly marked that there could be no sidestepping the results as indicated by the accounting records. And thus was laid the foundation for a budgetary control which should make possible a ready indication of the present status of the business and its future trend.

III. Relation of Walworth Business to the Business Cycle

Now as this development was progressing, the facts about the business, which had been simply guessed at before, began to accumulate and shape themselves into definite "rules of the business." We began to see that there was some rhyme and reason behind the past fluctuations in the business, and before long it seemed wise to inaugurate a statistical section which could run over the gathering figures and interpret them. Just how extensive the activities of this section would become was not definitely laid down. At first it was simply thought that something could be accomplished toward finding out where the Walworth business stood with relation to general business. Some publicity was being given at that time by certain economists to the theory that each business had its own cycles just as distinctly as general business. These economists suggested that any industry might find out its own cyclical changes and learn whether its movement was severe or easy. Furthermore, they suggested that the individual industry would probably find that its cycles corresponded in point of time with the cycles of business in general. It might discover that its particular volume reached its high or low point earlier than general business; or again that the general business situation developed a definite number of months in advance of its own varying conditions. But the first and most important suggestion they made was that if each business knew that it was affected in response to general business conditions, and could establish its position with regard to the general business movement, it would have a sure index of changes of policy that should be made to meet its own changing conditions.

This suggestion was in line with our own attempts at more definite control, for with the newly established organization and accounting methods to give us the facts, we needed only an indi-

cator to tell us how to make maximum use of them. So the Planning and Statistics Section had cut out for it an initial field of activity. The facts already at hand, compiled by the accounting department, became its raw material, and even though the accounting plan had not yet been fully developed, there was much work that could profitably be done.

The first experiments showed that a Walworth cycle did exist and that it was very marked. A curve representing this cycle action by a very simple statistical process was worked back as far as 1890 on the basis of records available in the treasurer's office. There seemed to be a fairly logical sequence over a period of a few years, and this sequence seemed to repeat itself continuously. It is true that there was no definite clock-like action in the length of time consumed by our business cycles, but there was a very definite cycle movement. The theory of the economists seemed to be working itself out in practice.

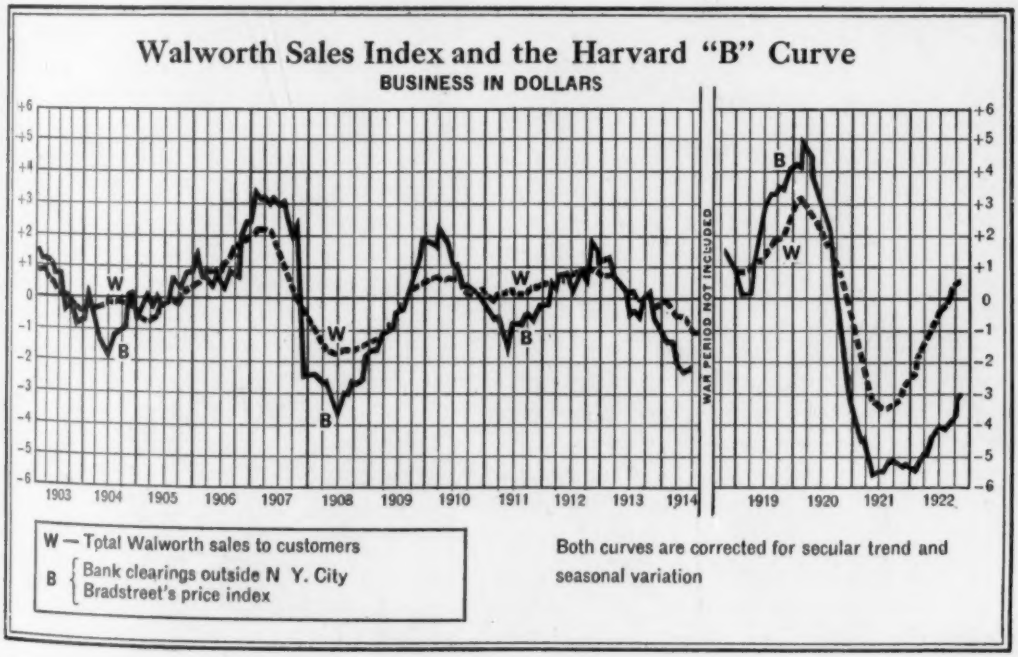
There had been for some time many advice letters coming in from business forecasting agencies, which had been read with the usual casual interest by most of the executives. The Planning and Statistics Section requested that all these letters, after they had been read, be forwarded to its files so that at leisure they might be reviewed and made further use of. Instead of going into the waste-baskets of the executives, these letters became the text-books of our investigators. As the staff became better acquainted with the good advice available, it seemed unprofitable not to make some tangible use of it. A very short study, in fact, made it apparent that our effort would be successful.

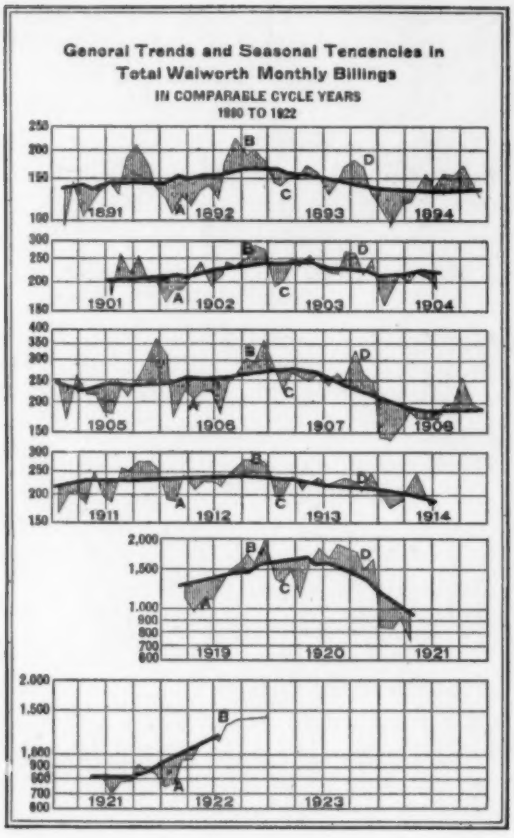
In every instance we found some similarity between the Walworth business curve and that of the barometers under investigation. The variation was greater in some instances than others, but there were in each some comparable elements. We did not, at the time, hope to find any curve which exactly paralleled our own. But we felt that if we could discover one which in the past had preceded or followed our own by a definite period, we could then accept the advice which that agency might give and adjust our plans forward or backward the exact number of months suggested by past experience. It was essential, however, that the number of months be very definite in order to provide a sound basis for policy planning and control purposes.

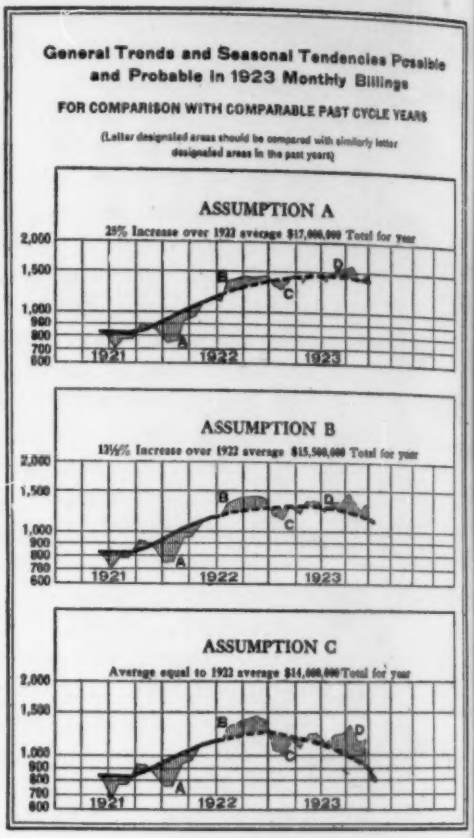
It was with great satisfaction, therefore, that we began our study of the Harvard Economic Service issued by the Harvard University Committee on Economic Research. Their method of presenting business cycles seemed at first a little technical, but a short study proved it easy to comprehend, and their charts indicating current status of business were much more definite in their forecasts than any others we had found. It was but a simple matter to change our cycle curve to a form which would enable a comparison with the Harvard B Curve. The accompanying chart illustrates how this was accomplished. Figures for the same 12 pre-war years covered by the Harvard B Curve were available. The war threw all barometers so far out of line that we did not attempt comparison during that period, but picked up the thread in 1919. It is generally conceded that more is to be learned with reference to normal business cycles from the pre-war years than from any later ones, and fortunately our records, though meager, supplied sufficient data to plot our line back to 1903.

There are three index lines on the Harvard chart and it would have been possible to attempt to compare our curve with any one of these. Had our business been speculative in nature, it would have been better to attempt correlation with the Harvard line representing speculation; or had it been primarily financial, we would have turned to the banking index for our comparison. But our industry is one of the bread and butter type of average business, so that it was evident from the first that the composite of the factors that control general business, the Harvard B line, was the one we should follow. The chart will show that our study was rewarded by finding an astonishing similarity between this B Curve and the Walworth line.

It is probably a matter of coincidence, that our high point comes in almost exactly the same month every time as the B line high point; and our low point is reached in almost the same month as the low point of the Harvard B line. The only exception to this seems to be that in the years 1903-1905 we had two low points, with the "half high" point in the middle of 1904. We did not trouble ourselves to explain why we acted differently in this case from general business. Possibly in the middle of 1904 the company cut prices too low and got in some extra business, but if some exceptional reason like this had been eliminated so that the sales were evenly distributed over 1903, 1904, and 1905, the low point would have accurately tallied with the B curve. The important fact which we observed was that this condition held true after as well as before the war. So again we found greater confidence in the Harvard curve than in the other barometers, because no other that came to our attention showed a clear-cut cycle action in general business resumed in 1919, while the Harvard curve made evident the fact that the normal cycle was resuming its activity in that year.


Walworth Sales Index and the Harvard "B" Curve
BUSINESS IN DOLLARS
WAR PERIOD NOT INCLUDED
1903 1904 1905 1906 1907 1908 1909 1910 1911 1912 1913 1914 1919 1920 1921 1922
W — Total Walworth sales to customers
B { Bank clearings outside N Y. City
Bradstreet's price index
Both curves are corrected for secular trend and seasonal variation




General Trends and Seasonal Tendencies Possible
and Probable in 1923 Monthly Billings
FOR COMPARISON WITH COMPARABLE PAST CYCLE YEARS
(Letter designated areas should be compared with similarly letter
designated areas in the past years)
ASSUMPTION A
25% Increase over 1922 average $17,000,000 Total for year
ASSUMPTION B
13½% Increase over 1922 average $15,500,000 Total for year
ASSUMPTION C
Average equal to 1922 average $14,000,000 Total for year
1921
1922
1923

A close study of the chart will bring out one essential difference between the pre-war and post-war curves—particularly in 1921 and 1922. There is now a faster rise in the Walworth than in the Harvard curve. We are beginning to think that this is due to our more effective planning and consequent prompter shipment of our merchandise after receipt of orders. In those earlier days there was hardly a choice but to accept the orders as they were offered and then to arrange to produce the goods as soon as physically possible. Since we are now able to forecast demand we can manufacture to meet known requirements, and have speeded up to a marked degree the shipment of orders as they are received. This means that our index line, which is based on billings, will probably move ahead of the B line instead of with it. Of course time is necessary to determine this to be a fact.

So we discovered that the second suggestion of the economists also found application in our practice. We had not only a business cycle of our own, but our cycle had a definite measurable relation to that of general business. And we were, therefore, in position to use in a very tangible way the forecasts which constantly passed through the Planning and Statistics Section. For instance, very definite predictions are given for a full calendar year in advance as to the action that may be expected for this Harvard B line. And their forecasts in turn are fairly well substantiated, at least as to general

probabilities, by the other forecasting services.

IV. Application of Cycle Theory and Data to Walworth Planning

In the summer of 1921 we had our first opportunity to make use of our discovery. The Harvard B line gave definite assurance that general business was scheduled for an advance. Even when we were not prepared for it, our records showed that we had followed closely the general business trend. What could we accomplish if we prepared for the increase in advance? Industry had just been through a bitter experience that made executives unusually cautious. But we had become firmly convinced by our studies, and such doubt as remained was finally brushed aside by further unquestioned evidence. At about this time the Planning and Statistics Section solicited from the F. W. Dodge Company full information on building contracts awarded. It was thought that the statistical barometers of that activity should prove very enlightening to a business such as ours, because of the nature of our product, which is so largely used in building construction. Again our business cycle curve was lined up with the cycle activity shown by the building figures, and there seemed to be in this case not only a direct relation between our curve and the building curve so far as time of cycle changes was concerned, but also there was a very definite suggestion as to the extent of our business variation. Each year that building was ahead a given percentage over the previous year, our business seemed to go ahead by the same amount in the same year; and each year that building fell off by a certain percentage, our business decreased by the same percentage. We did not infer from this that building was the cause of Walworth demand, but rather that the same cause which determined an advance for Walworth, determined an advance for building. It was a case of the mathematical proposition that things equal to the same things are equal to each other, so that the forecasts for building were very serviceable as a forecast for Walworth activity. Thus we had selected one outside barometer to indicate the length of time our curve might continue in its present direction before turning, and a second to suggest the degree of its elevation. As an illustration of how valuable such forecasting has been to us, it may be here mentioned that our estimates of sales for 1922 were figured at about 42% increase over 1921. As a matter of fact, building in 1922 advanced over 1921, 43% and our sales were within .5% of the forecast amount.

It was mentioned earlier that our business went ahead within a calendar year by the same percentage that general building activity advanced in the same calendar year. It is perhaps well to explain that in our business we must consider calendar years only. Our demand is so seasonal that in estimating the amount of business to be expected during any given set of months we cannot ignore the fact of the influence of seasonality within those months. For instance, the drop of January sales from December sales is 35%, averaged over a series of ten years. This means that in some the drop is as high as 50% and in an exceptional case, 60%. This is our seasonal variation at its worst, to be sure. However, from January there is a gradual rise to March with some falling off in April. May and June resume the stride set by

March with again a decline in summer. But September tends to reach the March figure with the October figure normally much higher than March. November and December vary somewhat, but the average is for November to be slightly lower than October, and December the best month of the year. It is unusual if the business cycle increase or decrease from one year to another is greater than 20 or 25%. Therefore, the seasonal influence is the greater, and to obtain a clear picture of the Walworth cycle we correct the year for seasonal trends and leave the seasonal problem to be taken care of after the cyclical trend has been found.

As a matter of fact it is not a difficult task to correct the seasonal variation in order to find the cyclical trend. The second chart illustrates our method of showing both seasonal and cyclical variations, and is the chart we used to compare similar periods in the past with a view to arriving at our estimates for the year 1923. Two points are brought out clearly in this chart: First, that although the seasonal variation of one year is not exactly like that of another year, yet there is a marked similarity; and second, that in no instance can we find an exact parallel to 1923, for in none of these years did the trend line stay up high so long as we have reason to expect it to do in the present year.

It will be noted that the chart displays a surprising similarity in the last half of the years 1892, 1902, and so on, which were found comparable to 1922, particularly in their seasonal tendencies. In every case a sharp recovery has taken place, the last months being far in excess of the January and February volume. In the same way we find the year following showing a decided downward trend, in one instance the November and December figures showing quite as low as January and February.

For a number of reasons, we were able to draw forward our sales index line with some confidence. The number of months we might expect the line to remain at high levels was very definitely forecast by outside agencies. Again, the amount of increase beyond 1922 was fairly well suggested by reliable figures. Finally there was a good background for plotting our seasonal areas to the trend line as we had extended it through 1923. This background was supplied by plotting out three "assumptions" and then by process of elimination using the most likely one.

The third chart shows these three assumptions, any one of which might seem at first to fulfil the conditions. But after superimposing on the cyclical trend the seasonal variations, it was evident that the second curve called "Assumption B" was much the most logical. Any volume of sales greater than that amount must be secured by greater efficiency in supplying the market through salesmanship, backed up by unusual cooperation of the works, and by complete utilization of the improved market facilities which have been provided for some of our merchandising units.

It was on the basis of Assumption B, therefore, that we laid out our preliminary production program for 1923. Naturally the sales estimate had to be broken down into class requirements and these compared with production facilities before even the preliminary control instructions could be issued. But having arrived at these class requirements we had a definite basis for setting up material and labor requirements, and for estimating financial demands.

It is not to be thought that this initial program for the year is adopted once and for all without current revision. So far as the production policy is concerned, there is established each quarter an estimate of actual sales requirements upon the two works as it appears at the time of making such a quarterly estimate. This quarterly estimate goes from the Sales Department through the Planning and Statistics Section to the Vice-President in Charge of Production, who uses it as a basis for formulating his quarterly production and purchasing programs, and for allocating the production between the two works. Nor is this the final step in the control. Each month before the existing production orders are completed or new ones are received, each works manager sends to the Planning and Statistics Section a statement of his proposed production by each of the classes for the coming month. These reports are coordinated and sent for review to the general office executives primarily interested, particularly to the Vice-President in Charge of Production for final review. Although at this time some of the work may be in process, it is yet possible to revise the production downward and to curtail purchases to some extent if desirable, or otherwise to revise the actual policies for the current month.

V. Budgetary Control of Sales, Purchases, Receipts, and Expenditures

In addition to control of production, there are naturally many valuable adjustments that can be accomplished by advance information of the type we have discussed. The most valuable is provided by the monthly budget of sales, purchases, payroll, and cash which is our business thermostat. This budget serves to control the expenses and finished material purchases of the merchandising units which deal con-

MAY, 1923, BUDGET

WALWORTH MANUFACTURING COMPANY AND SUBSIDIARY

	Billing	Purchases	Payrolls	Cash Receipts	Cash Disbursements	Inter-Co. Billings	Inter-Co. Purchases
	(A)	(B)	(C)	(D)	(E)	(F)	(G)
1 Gen. Off. Expense.....		$ 00,000.00	$ 00,000.00	$ 00,000.00	$ 000,000.00	$	$ 000.00
2 Eastern Div.	$ 000,000.00	0,000.00	0,000.00	000,000.00			00,000.00
3 Boston Works		000,000.00	000,000.00			000,000.00	00,000.00
4 Western Div.	000,000.00	0,000.00	00,000.00	000,000.00	000,000.00		00,000.00
5 Kewanee Works		000,000.00	000,000.00			000,000.00	00,000.00
6 Boston Branch	000,000.00	00,000.00	00,000.00	000,000.00		000.00	00,000.00
7 New York	000,000.00	00,000.00	00,000.00	000,000.00	00,000.00	000.00	000,000.00
8 Chicago	000,000.00	00,000.00	00,000.00	000,000.00	00,000.00	000.00	00,000.00
9 Seattle	000,000.00	000,000.00	0,000.00	000,000.00	00,000.00	00.00	0,000.00
10 Philadelphia	000,000.00	00,000.00	0,000.00	000,000.00	00,000.00	000.00	00,000.00
11 Portland	000,000.00	00,000.00	0,000.00	000,000.00	000,000.00	00.00	0,000.00
12 Total Branches	000,000.00	000,000.00	00,000.00	000,000.00	000,000.00	0,000.00	000,000.00
13 Wal. Int. Co.	000,000.00	00,000.00	0,000.00	000,000.00	000,000.00	000.00	00,000.00
14 Total	$0,000,000.00	$0,000,000.00	$000,000.00	$0,000,000.00	$0,000,000.00	$000,000.00	$000,000.00
15 Total Payroll		000,000.00					
16 Inter-Company				000,000.00	000,000.00		
17 Total	$0,000,000.00	$0,000,000.00		$0,000,000.00	$0,000,000.00		
18 Financial Exp.		(a) 00,000.00					
19 Total	$0,000,000.00	$0,000,000.00					
20 Capital & Other Chgs.		(b) 00,000.00					
21 Total	$0,000,000.00	$0,000,000.00					

(a) Financial Expense Includes $ 0,000.00 for int. on notes pay'ble
00,000.00 for int. on bonds (Book)
000.00 for insurance Chg. only
00,000.00 for special funds.
$00,000.00

(b) Capital Charges includes $00,000.00 Walworth Realty Co.

(c) None of the figures on the Budget indicate the effect of any proposed note transaction.

Planning and Statistics Section
Boston, April 24, 1923.

siderably in resale items as well as Walworth materials. Further, this budget serves as the treasurer's advance notice of probable cash requirements several months in advance of the actual requirement date.

On the tenth of the month previous to the one under review, schedules are sent to every unit which makes sales and therefore collects money, or which purchases materials and therefore disburses cash. By the twentieth of that month these schedules are all received back in the office of the Planning and Statistics Section and are combined into a master budget sheet, letter-paper size. This sheet is designed, as shown in the first tabulation, to give a summary picture of the activities of the whole company. First billings, by units, are set over against purchase invoices to be received and accrued payroll, by the same units. Then there are set against each other cash receipts and cash disbursements, both by similar units. The first set of columns on the accrued basis suggests readily the relation between commitments and sales income. Because of our usual terms of credit these two columns very definitely suggest the probable cash conditions 60 days hence; and the company's total of commitments when compared with sales suggests the current month's profit. The two next columns, or the "cash" columns, suggest probable cash position during the following 30 days. From the treasurer's viewpoint, these

MAY, 1923, YEAR TO DATE COMPARISON OF COMMITMENTS AGAINST SALES INCOME

(Based on January, February and March Actual, April Latest Estimated and May Preliminary Estimate) Computed April 24, 1923, in Thousands of Dollars

All Units (G. O. Regular Distributed to Sales Units.)	COMMITMENTS			SALES INCOME EXCLUDING PROFITS				1923 YEAR TO DATE EXCESS OF COMMITMENTS OVER INCOME (Approximating Increase in Inventory)				
					Anticipated Profit			May to Date	April to Date		March to Date	
	Purchases Incl. L/C & Chgs. from G. O. (Excl. Capital & otherChgs)	Total Payroll Charge	Combined Purch. and Payroll	Total Sales toCust. and Int.-Co.	Expected Per cent Profit Margin	Dollar Profit Am'ts	Sales Income Less ExpectedProfit	Visible as of 4/26	Visible as of 4/17	Visible as of 3/27	Visible as of 3/27	Visible as of 3/17
	A	B	C (A plus B)	D	E	F (D×E)	G (D−F)	H-5† (C−G)	H-4†	H-3†	H-2†	H-1†
1 East. Div.	$0,000.	$ 000.	$0,000.	$0,000.	0.0%	$ 00.	$0,000.	$ 00.	$ 00.	$ 00.	$ 00.	$ 00.
2 West. Div.	0,000.	0,000.	0,000.	0,000.	00.0%	000.	0,000.	000.	000.	000.	000.	000.
3 Boston	000.	00.	000.	000.	0.0%	00.	000.	00.	00.	00.	00.	00.
4 New York	000.	00.	000.	000.	0.0%	0.	000.	000.	00.	00.	00.	00.
5 Chicago	000.	00.	000.	000.	0.0%	00.	000.	00.	00.	00.	00.	00.
6 Seattle	000.	00.	000.	000.	0.0%	0.	000.	00.	00.	0.	00.	00.
7 Philadelphia	000.	00.	000.	000.	0.0%	00.	000.	00.	00.	00.	0.	0.
8 Portland	000.	00.	000.	000.	0.0%	00.	000.	00.	00.	000.	000.	000.
9 Total Branch	0,000.	000.	0,000.	0,000.		0.	0,000.	000.	000.	000.	000.	000.
10 Wal. Int. Co.	000.	00.	000.	000.	0.0%	00.	000.	0.	0.	00.	00.	00.
11 Grand Total	0,000.	0,000.	00,000.	00,000.		000.	0,000.	000. *000.	000. *000.	000. *000.	000. *000.	000. *000.
*12 Capital Chgs. and other (Only G. O. Expen. not distributed to Sales Units)												
13								$0,000.	$0,000.	$ 0,000.	$000.	$000.

Planning and Statistics Section Boston, April 24, 1923

†The number following any column, identified by "H," suggests that the figures therein have been copied over from the "H" column of the first, the second, or later issue, of this tabulation.

*Capital and Other Charges include the following:

January	$00. Munsing	**February**	$000. Income Tax	**March**	$00. Preferred Div.
	00. Wal. Realty		00. Cleveland		00. Common Div.
	00. Phila. Realty		00. Wal. Realty		00. Wal. Realty
	$00.		$00.		$00.
April	$00. Wal. Realty				
May	$. None				

$000. Total Capital Charges Listed.

cash columns will indicate the degree to which he may liquidate current borrowings from the banks, or the amount which he must provide to guarantee financing the inventory increase. Of course all this activity could not go on without inter-company exchange of goods, particularly from the works to the branches, so two more columns show, by units, inter-company sales and inter-company purchases.

From this "set-up" there can then be observed for each unit upon a single line across the sheet a summary of its condition as an individual entity. Sales to customers plus inter-company sales represent income. Purchases from outside vendors plus payroll plus inter-company purchases represent total commitments made for securing the sales of the month. Or, if there is any change in inventory, after a rough allowance for usual profit on sales, it is readily determined just how much each unit may be changing its inventory condition. Analysis in this form is carried out in the second table shown.

Such a summary for budgetary forecasting and control would not, of course, be possible had not the earlier groundwork been prepared. The reason it is a simple matter to obtain from each unit head an estimate of his own budget is because he knows very definitely just what his jurisdiction covers, and can obtain from his accounting records, over at least two or three years, the basic data necessary for him to use in estimating the future.

And again we find an opportunity to improve this estimating, because it is possible to prepare, with the expenditure of but a few hours' time every week, a summary of actual figures, which show us, currently, how closely our performance is meeting the estimate. This weekly summary of the actual status of the company is also prepared on a letter-size sheet of paper. It is set up in exactly the same arrangement as the master estimate for the month so that direct comparison item by item and unit by unit can be made. It is readily discernible on the fifteenth of the month from the weekly master budget report coming out at that time, whether or not, for instance, our Chicago Branch is likely to spend more in the month than they first anticipated. The branch in such a case is supposed to have previously notified us that the estimate was in error. But the weekly reports would develop the situation automatically.

Immediately after the end of the month, approximately 15 days before the final detailed auditor's statements can be made available, the Planning and Statistics Section, from the current accounting sheets as they pass over the desk, abstracts figures for preliminary reports issued to the officers in charge of activities. These reports cover monthly tonnage of orders received, shipments and production, actual purchase commitments, payroll, cash receipts and cash disbursements. There are issued a few other preliminary, yet essentially accurate actual reports on activities necessary for current control. When the auditor has made out his detailed reports according to the accounting classification, the Planning and Statistics Section issues comparison letters for the various estimators. This is done so that the estimators may have the lump sum actual totals for the month, in the same form in which they estimate by items for future estimates; and also in order that they may know how far their actual figures vary from the estimate. When some exceptional condition causes the variation between the actual and the estimate, this is ex-

plained by the Planning and Statistics Section, but ordinarily the estimater is expected to find the reason for himself and to send in his own explanation.

Perhaps the thing that is most significant in our budgetary system is the simplicity with which it has been possible to operate it. The present work is carried on by three clerks in the general office. The budget is of such a nature that it groups itself into two rush periods during the month, and this makes it possible for the same group of clerks to do the necessary research study when the actual budget work is not pressing. It has not yet been necessary to search for figures that were not readily available from the accounting system as it had been developed with a view to budgetary control. With the records accruing from the initial accounting, it has required but little rearrangement and interpretation of the facts at hand to present them in form for application to budgetary needs. Yet this is one of the greatest benefits to be derived from the budgetary procedure.

It is quite generally conceded by those who first had objections to estimating for the Master Budget that they would not now consider giving it up. One of these executives, who had thought that time given to budget estimating would be wasted, has since said that he now realizes that he never before had a real grip on his job. The requirements upon him to estimate the future have forced him to analyze the present. There can be no question that every executive of our company has a knowledge of his duties that he never had before.

VI. Conclusion

Were I unfamiliar with a control system of this type and reading a crude outline of this kind, I am conscious that I should be saying to myself, "All this is very well, but what does it accomplish? This may be a good recipe, but 'the proof of the pudding is in the eating.' What has the budget really accomplished for the Walworth Manufacturing Company?"

Here are the results for the year 1922: Our actual sales came within .5% of our estimate. Cumulatively the first six months were 8% in excess of the estimate; the first nine months were 4.3%, but the full year's figures were so close to the estimate as to be a coincidence. We do not expect again to equal this particular record. We have reason to believe that the earlier months of the year were thrown out of line because of our increased ability to ship promptly. Having advance information, we were able to decide on a production plan that would give us an even flow of material throughout the year, building up our stocks in the spring and summer months to meet the fall demand. This accomplished not only better service to our customers but greater economy of production, more even employment for our workmen, and a great decrease in labor turnover. It enabled us to anticipate our material requirements and to take advantage of low price conditions. It gave our treasurer exact information as to financial requirements. It made it possible for me to place before our directors a definite estimate of the amount of money that would be involved in producing in advance the excess stock necessary for fall delivery, and it justified them in adopting the program because I could assure them that this investment could be liquidated before the end of the year. It enabled us to set up an ideal inventory for the end of the year and to work toward final liquida-

tion to this ideal point. It proved that this inventory control was practicable because we came within the limit set by my office.

Of all these benefits, probably the greatest has been our ability to operate on an even basis throughout the year. Under the old conditions we would have produced 16% of our total requirements in the first quarter; 22% in the second quarter; 28% in the third quarter; and 34% in the fourth quarter. In 1922 it was possible to approximately equalize the quarterly production figures. In these days when seasonal employment is one of the country's greatest problems, when labor turnover is great and when an actual shortage of labor has occurred, continuous employment at fair wages is the stimulus to the good workman that no temporary attraction can equal. Carried over a period of years it will secure the type of labor that makes for economy and efficiency. This does not mean of course that we can counteract the cyclical fluctuations. The fact that we are able to take care of this problem within each calendar year is a substantial step in the right direction.

Budgetary control is now one of the fundamental policies of the Walworth Company. It is our record of the past, our index for the present, and our guide to the future. We believe it to be an essential factor in our success.

THE RELATIONSHIP OF THE BURLINGTON-GREAT NORTHERN-NORTHERN PACIFIC GROUP TO THE FEDERAL RAILROAD CONSOLIDATION LAW

By WALKER D. HINES

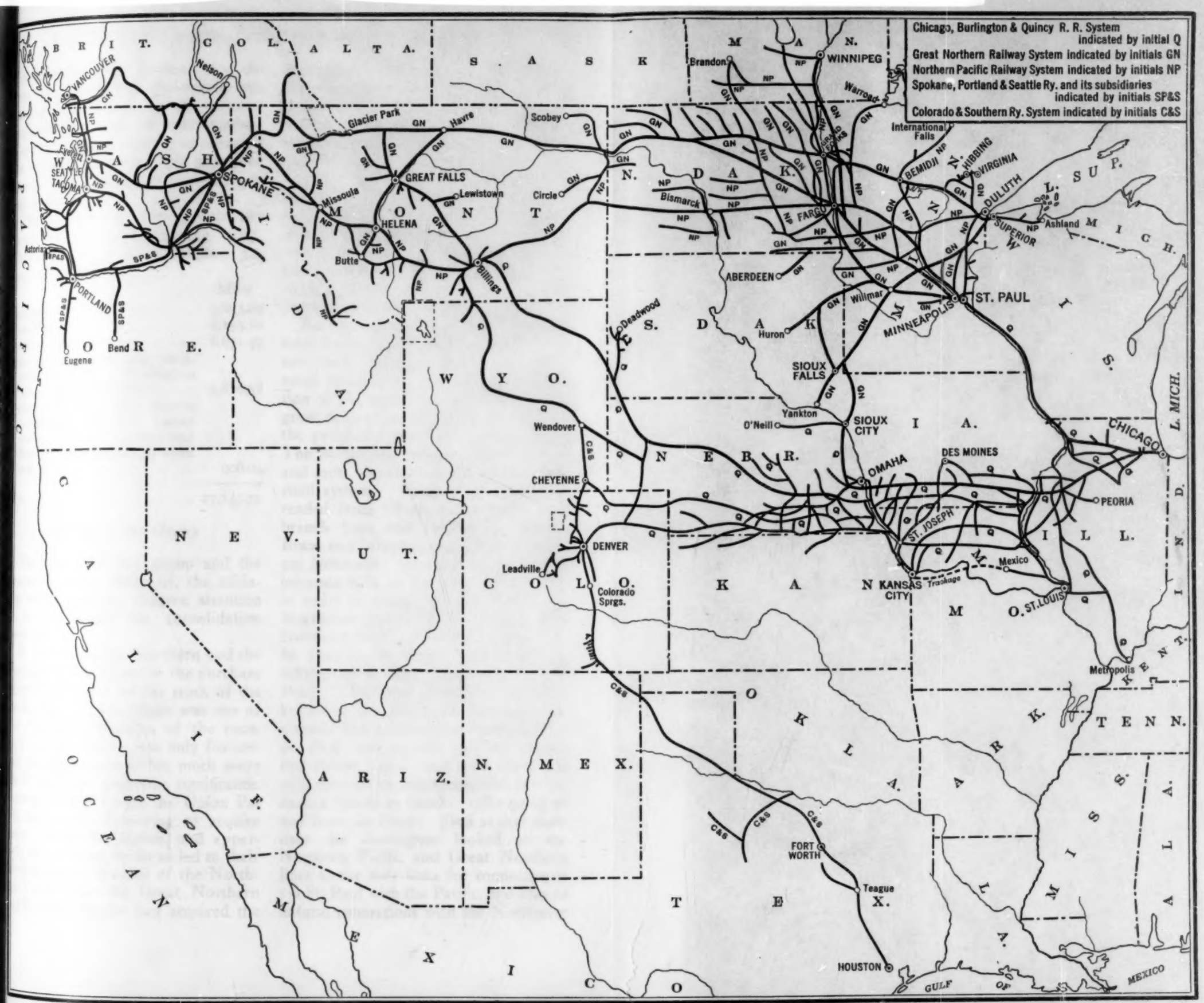
THE Act of Congress known as the "Transportation Act, 1920" provides that the Interstate Commerce Commission shall adopt a plan for the consolidation of the railway properties in this country into a limited number of systems, and empowers the Commission to authorize consolidations in harmony with such a plan. In the past, the Federal Anti-Trust Act and numerous state laws have prohibited the merger of the control of competing railroads, but all such legislation will be superseded by authority to consolidate when given pursuant to the Transportation Act.

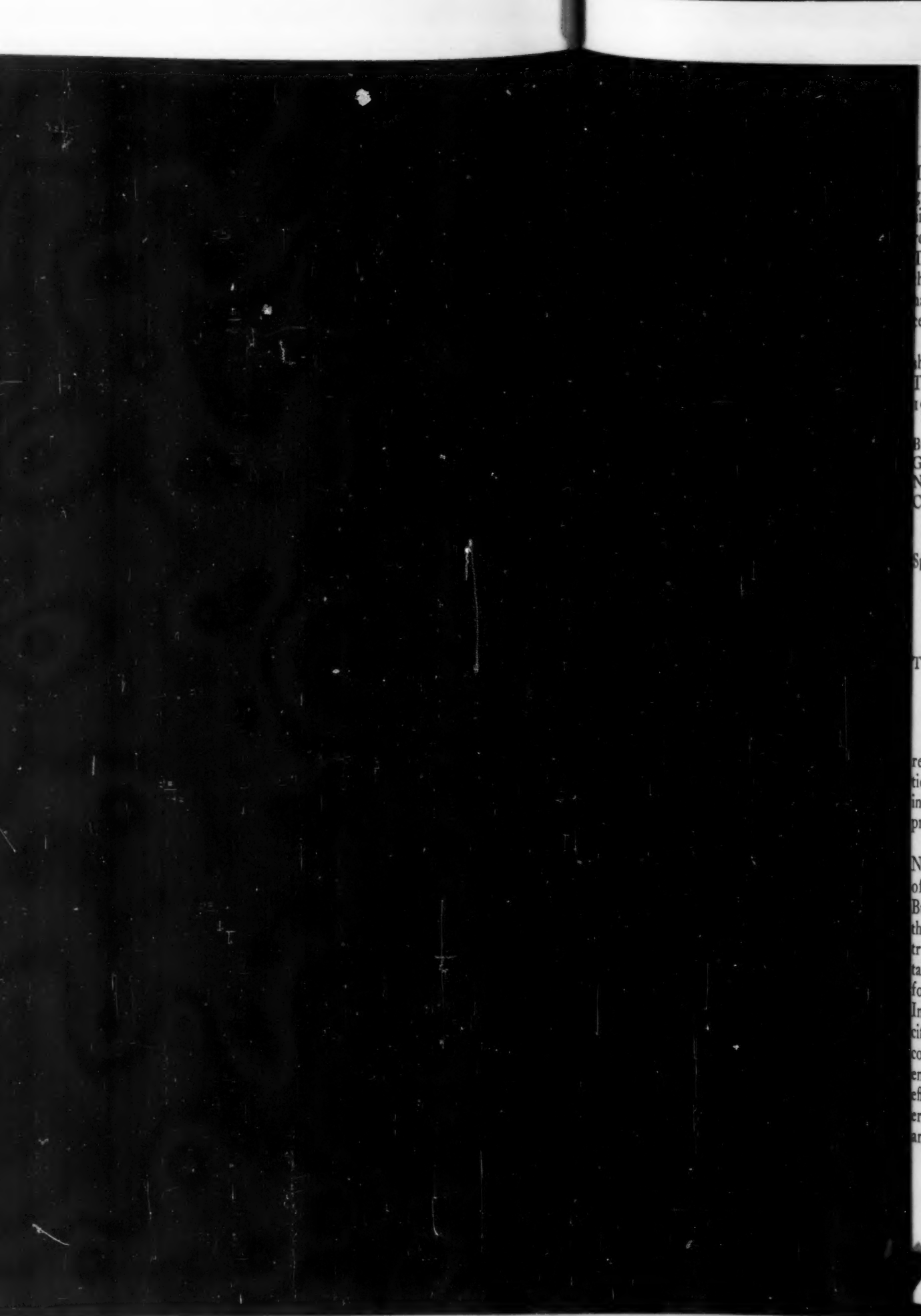
This new federal legislation is therefore a significant departure from former laws as to mergers of railroad control. It conforms to the growing belief that there are too many railroads, with injurious diversity as to strength or weakness, and that consolidation will improve transportation and simplify governmental regulation.

It is noteworthy that the law is not compulsory but merely provides a permissive method for consolidations. Railroad companies which proceed in accordance with the action of the Commission under the law have permission to consolidate if they see fit but are not compelled to do so. Congress has thus relied upon the motive of self-interest on the part of the railroads to bring into existence the consolidations deemed desirable for the promotion of the public interest.

Generally speaking, railroad development in this country has observed certain regional limits. The territory east of the Mississippi River and south of the Ohio River to Cincinnati, and thence south of the Chesapeake and Ohio and Norfolk and Western Railroads is known as Southern Territory. The territory lying to the north thereof and east of the Mississippi to a point a few miles north of St. Louis and thence east of a line to Chicago is known as Eastern Territory. The territory west of Southern and Eastern Territory is known as Western Territory. As a rule railroads situated in one of these territories do not extend to an important degree into either of the others. There are minor exceptions to this rule and there is the major exception of the Illinois Central, which has important mileage in each of the three territories, Eastern, Southern, and Western.

In the Western Territory one of the most significant railroad groups is that consisting of the Burlington, Great Northern, and Northern Pacific. The affiliation of these three lines grows out of the equal control of the Burlington by the two Northern companies. This community of interest brings the mileage controlled by the three companies within easy reach of actual consolidation, if authorized pursuant to the


Chicago, Burlington & Quincy R. R. System indicated by initial Q
Great Northern Railway System indicated by initials GN
Northern Pacific Railway System indicated by initials NP
Spokane, Portland & Seattle Ry. and its subsidiaries indicated by initials SP&S
Colorado & Southern Ry. System indicated by initials C&S
B R I T. C O L. A L T A.
S. A S K.
M A N.
WINNIPEG
Brandon
Warroad
International Falls
VANCOUVER
Nelson
Everett
SEATTLE
TACOMA
W A S H.
SPOKANE
Glacier Park
Havre
Scobey
GREAT FALLS
Lewistown
Circle
Missoula
HELENA
Butte
Billings
Bismarck
N. D A K.
FARGO
BEMIDJI
HIBBING
VIRGINIA
DULUTH
SUPERIOR
Ashland
L. SUP.
MICH.
Astoria
PORTLAND
Eugene
Bend
O R E.
ABERDEEN
Willmar
MINNEAPOLIS
ST. PAUL
Deadwood
S. D A K.
Huron
SIOUX FALLS
Yankton
O'Neill
SIOUX CITY
I A.
W Y O.
Wendover
CHEYENNE
N E B R.
OMAHA
DES MOINES
CHICAGO
L. MICH.
PEORIA
DENVER
Leadville
Colorado Sprgs.
C O L O.
KANSAS CITY
Trackage
ST. JOSEPH
Mexico
ST. LOUIS
I L L.
IND.
Metropolis
KENT.
TENN.
N E V.
U T.
A R I Z.
N. M E X.
O K L A.
ARK.
MISS.
ALA.
FORT WORTH
Teague
T E X.
HOUSTON
GULF OF MEXICO
PACIFIC OCEAN
C&S
GN
NP
SP&S



Transportation Act. In fact, to a degree not approached elsewhere, the situation lends itself to the prompt realization of the idea of consolidation. The treatment of these properties in the consolidation plan will therefore have an important bearing upon the success of that plan.

The railroads of this group are shown on the accompanying map. Their mileages as of December 31, 1922, are as follows:

	Miles
Burlington	9,645.69
Great Northern	8,255.56
Northern Pacific	6,631.47
Colorado and Southern and subsidiaries (controlled by Burlington through stock ownership)	1,810.98
Spokane, Portland and Seattle (constructed for and owned equally by Great Northern and Northern Pacific through stock ownership)	906.04
Total	27,249.74

History of the Group

The history of this group and the reasons for, and results of, the affiliation of its members deserve attention in the study of the consolidation problem.

In 1901 the Great Northern and the Northern Pacific joined in the purchase of more than 97% of the stock of the Burlington. This purchase was one of the outstanding features of the country's railroad history, not only for certain dramatic incidents but much more for its profound economic significance. Interests identified with the Union Pacific had been endeavoring to acquire control of the Burlington, and apparently their inability to do so led to their effort to acquire control of the Northern Pacific after the Great Northern and Northern Pacific had acquired the Burlington; in this struggle the interests friendly to the Union Pacific acquired a majority of the stock of the Northern Pacific but did not have a majority of the common stock, which it was found had the right to and did retire the preferred. The result was to leave the control of the Northern Pacific where it was before these efforts were made. It was in connection with this fight for control of the Northern Pacific that the Northern Pacific "corner" sent that stock as high as 1,000 on the New York Stock Exchange in May, 1901.

But the acquisition of the Burlington stock by the Great Northern and Northern Pacific in April, 1901, was not a stock speculation. It was the realization of the logical destiny of the three great railroad properties clearly seen by the prophetic vision of James J. Hill. The Burlington was one of the earliest and most vigorous of the western railroad systems. Already in 1883 it extended from Chicago to Denver, with branch lines and feeders in Illinois, Iowa, and Missouri, and all over southern Nebraska. In 1886 the Burlington interests built an extension to St. Paul in order to secure connection with the Northwest and the Pacific Coast. The Northern Pacific already extended from St. Paul to the Pacific, besides having substantial mileage northwest of St. Paul. The Great Northern was then known as the Manitoba Company and already had various lines northwest of St. Paul, was rapidly pushing toward the Pacific Coast, and even then was able through its connection with the Canadian Pacific to handle traffic going to and from the Pacific. Thus at that early date the Burlington looked to the Northern Pacific and Great Northern lines as the only links for connecting it via St. Paul with the Pacific, and also as natural connections with the Northwest

which one of the Burlington's experts then characterized as "a vast prolific country lying there undeveloped, promising a growth in the future so large that it is impossible to estimate it." The importance of these connections to the Burlington in reaching this northwest territory is illustrated by the following statement of the mileages of the Great Northern and Northern Pacific lines at the dates shown in Wisconsin, Minnesota, the Dakotas, and Canada north of the Dakotas:

	Great Northern	Northern Pacific
June 30, 1886.....	1,509.45	1,346.22
June 30, 1893.....	2,744.48	2,037.70
December 31, 1922...	4,685.08	2,914.66

The Burlington extension to St. Paul occupied jointly with the Manitoba Company the terminals of that company in St. Paul and Minneapolis and used the tracks of that company between those cities; and under the contract then made the Burlington still jointly occupies with the Great Northern the same Great Northern facilities with extensive improvements which the Great Northern has made to accommodate the increased business of itself and the Burlington.

In the late '80s and early '90s the Burlington was seriously considering constructing outlets of its own to Puget Sound, as well as making connections in Montana with the Northern Pacific and Great Northern lines. In 1894 it completed a line to Billings, Montana, connecting with the Northern Pacific, and had in contemplation building still further to Great Falls to connect with the Great Northern. A contract was made in 1894 between the Burlington and the Northern Pacific for the interchange of traffic at Billings, and the Burlington then and ever since has used jointly with the Northern Pacific the latter's facilities at Billings and in its vicinity. Having thus established a satisfactory outlet via the Northern Pacific, and being within reach of the additional outlet by the Great Northern, the Burlington no longer felt under the necessity of constructing a line of its own to the Coast. A few years later, as will be shown below, the Great Northern instead of the Burlington constructed the necessary connecting link between Great Falls, on the Great Northern, and Billings.

When in April, 1901, the Northern Pacific and Great Northern acquired the Burlington stock, the complementary character of the relationship between the Burlington and each of the Northern companies was set forth as follows in a public announcement by James J. Hill:

> Now the Burlington has food and fuel to a degree not possessed by any other transportation system. Reaching from Chicago to Denver, and from the Twin Cities to St. Louis and Kansas City, it covers the richest and most diversified zone in the world in the production of grain, and provisions, and fuel. What do these central prairies of Illinois, Iowa, Missouri, and Nebraska require in return? They need lumber. From where is the lumber to come? From Washington and British Columbia. This is the only region with a heavy timber surplus. Look at the volume of this traffic. The great central belt between the Alleghenies and the Rockies consumes something like 10,000,000,000 feet of lumber annually, and produces perhaps half of that. Some of this will come from the South, but the bulk from the Puget Sound country.
>
> Thus, on the one hand, we have a vast surplus volume of grain, provisions and fuel in the Mississippi and Missouri Valleys seeking eastern and western outlets, and a similar large surplus product of lumber in the Puget Sound country likewise pushing for markets, and especially for the treeless prairies of the Mississippi and Missouri. Grain, provisions, fuel, and lumber constitute the principal heavy staples which govern traffic and make traffic routes. What, then, have we reached? We

have a tremendous volume of traffic across the Northwest between Puget Sound and the Mississippi Valley. The Northern roads will carry westward the meat, and corn, and coal, together with the raw cotton originating within Burlington territory at St. Louis, and will place these products on the Pacific docks for export to Asia, and for the return trip the freight trains will bring back lumber for the Central West and East. Nature and her products govern transportation routes and traffic; we railway men can simply get in line or fall by the way.

At the same time Charles E. Perkins, president of the Burlington, announced with reference to the transaction that the Burlington would be assured of a permanent connection with the great Northwest "rich in minerals and lumber, with its market for agricultural and other products, and with the commerce of the Pacific Ocean by way of Puget Sound and the Columbia River," and that the Northern roads would be assured of a permanent connection "with the agriculture and manufactures of the Middle West, and the markets to be found there for the products of the North and the commerce of the Pacific." He added:

> Look at a map and see how the lines of these corporations fit into and supplement each other. And when doing so it will interest you to trace, and compare with these railroads of today, the line of march of Lewis and Clark, who took possession of the Louisiana purchase for the Government of the United States a hundred years ago.

This situation was further illustrated by the Annual Report for 1901 to the stockholders of the Great Northern made by Mr. Hill, as president, and on behalf of the board of directors, in which it was said:

> The territory served by the Burlington produces most of the machinery and implements used on the farms, in the forests, mines, and mills of the tier of states reached by the Great Northern and Northern Pacific. It also produces a large part of the iron and steel products exported to Asia via the Pacific Ocean. Chicago, Kansas City, St. Joseph, and Omaha are the largest provision centers in the country. At St. Louis it connects with each of the cotton-carrying lines of the South and Southwest. On the other hand, the Burlington territory takes for fattening the live stock raised on the northern and western farms and ranches. It consumes lumber in all shapes on a large scale. The timber of Michigan, Wisconsin, and Minnesota will soon be gone. The forests of the state of Washington must hereafter, to an increasing extent, supply the demand for lumber in the prairie states of the Middle West. Those forests are now the most extensive and most available body of sawing timber standing in the United States. The Great Northern penetrates them in many places, and should be in a position to reach a market and to secure the haul of the vast tonnage they are capable of affording. The size and value of this traffic will constantly increase.

One of the important reasons assigned for the Burlington's extension to St. Paul was the movement of coal from mines on the Burlington in Illinois to the northwestern territory. Shortly after the purchase of the Burlington stock by the two Northern companies, James J. Hill caused investigations to be made to find a more satisfactory coal supply on the Burlington lines in southern Illinois than was available in northern Illinois. Such coal was found, and has been developed, and the movement of southern Illinois coal over the Burlington has attained a volume of 9,000,000 tons a year, about a million tons thereof going to or beyond the Twin Cities. Since 1901 the Burlington has constructed and double-tracked a railroad to the southern Illinois coal fields and in order to handle the increasingly important coal and other traffic to and beyond the Twin Cities has double-tracked most of its line to St. Paul.

To secure to the Burlington and

Great Northern an important movement of traffic between Nebraska and the Twin Cities, and to promote an efficient triangular route for freight cars between Nebraska, the Twin Cities, and Chicago, the Great Northern about 1907 caused to be constructed 108 miles of railroad between Sioux City, Iowa, and Ashland, Nebraska, on the Burlington (the railroad subsequently being turned over to the Burlington), and extensive terminals at Sioux City for the use of the Great Northern and the Burlington, the total cost of these improvements being over $6,000,000, thereby furnishing a direct line from Burlington territory to the Twin Cities.

In 1908 the Great Northern constructed, at a cost of about $12,000,000, 194 miles of railroad so as to reach the Burlington near Billings, Montana, and so as to provide an all-the-way Great Northern route, as well as an all-the-way Northern Pacific route, between Billings and the Pacific Coast. In 1915, because its existing line to Billings could not continue to handle the rapidly growing traffic interchanged through Billings with the Northern lines, the Burlington constructed at a cost of $17,000,000 its alternate line to Billings, known as the Big Horn Basin line.

In 1908 the Burlington acquired a controlling interest, through the purchase of stock, in the Colorado and Southern and its subsidiary, the Fort Worth and Denver City, which constituted a route from the Burlington in Wyoming to Denver and thence to Fort Worth. This step gave the group a direct, short, and efficient through route between Texas and the North Pacific Coast for participation in the rapidly growing north and south traffic and notably in the lumber traffic southbound and in the cotton traffic northbound to the North Pacific Coast for export.

The confidence in and prophetic estimate of the potentialities of this group of railroads have been fully justified. Each of the three companies has prospered, due in important measure to the increasing interchange of traffic between the Burlington and each of the other two. This prosperity has given these companies a credit which they have used to increase and improve their public service.

From 1901 to 1921 this group of railroads increased its main track mileage by 5,900 miles, or 28.8%, its mileage of all tracks by 44%, the tonnage capacity of its freight cars by 158%, and the tractive power of its locomotives by 252%. To accomplish these extensions and enlargements the companies made capital expenditures in that period to the amount of $888,000,000. The average revenue per ton-mile for the group diminished from 1901 to 1917 (the last year susceptible of satisfactory comparisons on account of the subsequent rapid increases growing out of conditions created by the war), from 8.87 mills to 7.13 mills, a reduction of nearly 20%, whereas the average reduction for the other seven leading western lines, the Northwestern, Union Pacific, Southern Pacific, Santa Fe, Rock Island, Missouri Pacific, and the St. Paul, was from 9.32 to 8.55 mills, or a reduction of slightly over 8%.

An important feature of the geographical location of these lines is that the Burlington is situated in a territory distinctly different from the territory served by the two Northern lines, and it is this difference in geographical location, with resulting differences in climate and crops and other products that makes the Burlington fit in so admirably with the two Northern lines. It was Mr. Hill's clear understanding

of this condition which made him so positive in his opinion that the Burlington was the natural associate of the two Northern lines. For example, he was never favorable to the suggestion that the St. Paul Railroad should be acquired by the Great Northern and the Northern Pacific, because the territory occupied by the St. Paul was too nearly the same in its characteristics with the territory already occupied by the Great Northern and the Northern Pacific. What Mr. Hill sought was a line thoroughly entrenched in a different territory, presenting reciprocal needs rather than identical needs as compared with those of the two Northern lines. This he found in the Burlington.

The Transportation Act's Tests

The underlying test of the law is that the consolidation plan shall appeal in a practical way to the legitimate interests of the carriers; for the plan is permissive merely.

Each of the Northern companies is vitally interested in preserving its traffic interchange with the Burlington; in preserving the utility and value of the various improvements and extensions which it has made since the purchase of the Burlington stock in 1901 for the very purpose of building up the interchange of traffic with the Burlington; and, in addition, in preserving unimpaired the prosperity of the Burlington. Similar motives exist on the part of the Burlington. Either Northern company, if asked to eliminate itself from the group and sell its Burlington stock so as to bring about the consolidation of the Burlington with the other Northern company, would be compelled to decline for the reasons indicated. Similar reasons would compel the Burlington to decline to facilitate such a breaking up of the group. It should also be remembered that more than 97% of the Burlington stock is pledged with mortgage trustees, one-half to secure bonds of the Great Northern, and the other half to secure bonds of the Northern Pacific, which bonds, so secured, have been issued with the approval of the Interstate Commerce Commission.

On the other hand, there is every reason why the group should take all action necessary to convert its existing affiliation into an actual consolidation. The officers of the three companies have announced that the companies are prepared to proceed to an actual consolidation in conformity with the purpose of the Transportation Act, provided the Commission's sanction shall be given.

The Transportation Act also directs that the consolidated systems shall be formed so that wherever practicable the existing routes and channels of trade and commerce shall be maintained. The producers of coal, provisions, machinery, and other commodities throughout the Burlington territory have built up highly important markets on each of the Northern lines and the producers of commodities originating on the Northern lines have developed important markets in the Burlington territory. The routes and channels for the movement of this traffic are via the connections between the Burlington and each of the two Northern lines at St. Paul and at Billings, and via the connection between the Great Northern and the Burlington at Sioux City. These routes cannot be preserved to the satisfaction of the shippers on the respective lines if the two Northern lines are not both put in the same system with the Burlington. The merchants, manufacturers, farmers, and other producers naturally rely upon the continuance of channels of trade which have

been so fully and successfully developed and enjoyed. The volume of the interchange between the Burlington and each of the Northern companies suggests the extent and importance to the public of preserving these channels. For the five years, 1917 to 1921, both inclusive, the aggregate of this interchange was as follows:

Burlington-Great Northern..14,517,677 tons
Burlington-Northern Pacific..12,885,192 tons

Either one of these interchanges is in excess of any other western interchange which would be brought in question by any suggested grouping of the western railroads for purposes of consolidation, so that to place either one of the Northern lines in a different system from the Burlington would involve the greatest dislocation in existing routes and channels of trade which could arise in connection with railroad consolidation in the West.

RATE OF RETURN

Year Ending Dec. 31	Combined Class 1 Roads Western District	Great Northern, Northern Pacific, Burlington Systems and Subsidiaries
1916	5.79%	6.76%
1917	5.42	5.95
1918	3.72	4.12
1919	3.06	3.48
1920	1.28	1.54
1921	3.21	3.43
1922	3.54	3.73

The Transportation Act also provides that so far as practicable the several consolidated systems shall be so arranged that the cost of transportation shall be the same, so that the systems can employ uniform rates and earn substantially the same rate of return upon the value of their respective properties. The results of operation of this group have been approximating to an increasing degree the average results of operation for the western railroads in general, as is shown by the table above, which shows percentage relation of net railway operating income to investment in road and equipment, i. e., the "rate of return."

One of the purposes of the consolidation law, regarded by many as the principal purpose, is to provide a method whereby the "weak railroads" can be combined with the "strong railroads." To whatever extent, in carrying out this principle, "weak railroads" might be put with the group under discussion, the rate of return for such consolidated system would, of course, be diminished below the rate of return above indicated.

The idea has been suggested, although negatived by the above comparison of rates of return, that the group here under consideration is so much stronger than the average of the western roads that it should be divided up and its members rearranged with other roads so as to accomplish a nearer approach to uniformity. While the idea is based upon a misconception of the facts, it is well to point out also that it involves a misconception of the law. The language of the expression about practicable uniformity of rate of return does not require, and the purpose of the consolidation provision prohibits, the application of any theory that existing strong systems or groups should be split up for such an object.

The purpose of the consolidation law is to give greater strength and certainty to the railroad situation and greater reliability to railroad securities so as to enable the strong systems or groups to take over and support the weak roads in fact and not merely on paper; the purpose of the law is to make the situation not weaker but stronger. Hence the strength of an existing group must

not be dissipated simply to rearrange the roads so as to produce a lower theoretical uniformity of return.

The breaking up of a group, so long and so thoroughly integrated in its relations, as that of the Burlington, Great Northern, and Northern Pacific, and the regrouping of those roads with others, would not be a mere mathematical rearrangement of existing earnings. Such a step would substitute for existing definiteness a high degree of uncertainty with strong probability of loss. The Burlington, if it should lose its interchange with either of the Northern lines, would suffer direct earning impairment with no assurance of an offsetting gain by anything additional it could receive in its new and restricted association. The Northern lines, deprived of association with the Burlington, would be correspondingly affected. For example, if the Great Northern were thus eliminated from the group, the Great Northern's line of 194 miles, built to connect with the Burlington at Billings, would virtually dry up, and the same would probably be true in large measure of the Great Northern's line into Sioux City, Iowa, to say nothing of serious impairment otherwise. The practical injury to railroad credit resulting from such direct and positive consequences would not be offset by any theoretical possibility of gains in other directions. The law does not seek a result so inconsistent with its object.

The only other test provided by the Transportation Act for the guidance of the Commission in adopting a plan for consolidation is that competition shall be preserved as fully as possible. The preservation of all competition is not contemplated and, if contemplated, would preclude consolidation. It is believed the Act seeks to accomplish the benefits of extensive consolidation while preserving and strengthening a sufficient number of vigorous competing systems to give the country the benefit of competitive policies and standards and in general the benefit of competitive initiative.

The competition which would be eliminated by continuing the group here under discussion as a consolidated system is not the sort of competition which the law seeks to preserve. As a matter of fact there is no substantial competition between the Burlington and the two Northern lines. As to competition between the two Northern lines, their officers estimate that less than 2% of the total tonnage handled by them is handled at stations where the two lines are the only competitors. On the other hand, nearly all the competition between the two lines is at places where other vigorous competition would continue and could be rendered even more effective by a consolidation plan which would leave the present group in the same consolidated system.

If the two Northern companies were put in the same system with the Burlington, the great movements of traffic between Seattle, Tacoma, Portland, Spokane, Butte, Great Falls, Sioux City, St. Paul, Minneapolis, Duluth, and Superior would still continue competitive, because all these terminals would continue to have competing systems, such as the systems, among others, in which the St. Paul, the Soo Line, and the Union Pacific would be placed. In this way competitive standards in service and in other respects would be maintained, and this would amply protect and promote the public interest as contemplated by the Act.

The "Northern Securities Case" has no bearing on this question. After the purchase by the Great Northern and Northern Pacific of the Burlington

stock, some of those who were stockholders in both the Great Northern and the Northern Pacific conceived the plan of forming a holding company in which to vest their shares and the shares of other stockholders of the two companies, and such a holding company, known as the Northern Securities Company, was formed. This arrangement was declared to be in conflict with the Anti-Trust Act of 1890 because of the competition between the Great Northern and Northern Pacific. But this decision was rendered on the strength of the Anti-Trust Act and that Act has no bearing upon the standards created by the Transportation Act in connection with the consolidation of railroads. For example, recently the Supreme Court of the United States held that the Central Pacific and Southern Pacific were competitive and hence that the control of the Central Pacific by the Southern Pacific Company was in violation of the Anti-Trust Act. Nevertheless, the Interstate Commerce Commission has since held that under the provisions of the Transportation Act the Southern Pacific may be authorized to continue the control of the Central Pacific under such terms and conditions as the Commission deems reasonable and just.

The public advantages peculiar to the consolidation of this particular group would be highly important in addition to the advantages which would arise from large consolidations generally. In the first place, the public would have the advantage of not being subjected to the injury which would result from the breaking up of the close working arrangements, both traffic and operating, which have been created over the period of 22 years during which time each of the Northern lines and the Burlington have developed their properties and practices so as to facilitate superior through service and so as to realize important economies.

In the second place, the public would secure various further advantages as compared with any other arrangement of these properties. One of these advantages would be that the consolidated system would be well assured against vicissitudes, such as business depressions and crop failures, which may occur locally and which would be much more serious in the case of a system confined to a narrow territory. The danger of too great dependence on a particular crop is especially great in the northern tier of states west of Lake Superior, where the reliance is very largely upon a single crop, spring wheat. Another special advantage would be that the increased opportunities for making the most efficient use of freight cars would admit of giving more service with a given number of cars than is practicable at present, particularly because of the fact that the peak of the demand for freight cars on the Burlington would not come at precisely the same season with the peak of the demand for such cars on the Great Northern and Northern Pacific, due to difference in the dates of crop maturities.

An important economy would result from the fact that the Great Northern and Northern Pacific are so related to each other that in many places a combination of parts of the two roads will make a shorter route than the use of either road separately, involving a saving in distance varying from 18 miles to 300 miles. President Budd, of the Great Northern, has estimated that economies from putting together the properties controlled by these three companies, including both those peculiar to this system and those which could reasonably be anticipated from

any large consolidation of railroads having a natural practical relationship to each other, would be not less than $10,000,000 per year from the beginning and would increase with the lapse of time as full opportunity could be realized for such accomplishments as standardization of equipment and of other materials and supplies.

The Proceedings Before the Commission

The readers of the Review are of course aware that the Interstate Commerce Commission is now proceeding with hearings on the subject of consolidation, to the end that it may adopt a complete plan of consolidation, as provided by the Transportation Act.

The Commission first promulgated, as required by the Transportation Act, a tentative plan of consolidation which was based upon a remarkably able and comprehensive report prepared for the Commission by Professor William Z. Ripley. Professor Ripley's report and also the Commission's tentative plan suggested making the Northern Pacific and the Burlington the base of one system and the Great Northern and the St. Paul the base of another system, thus disrupting the 22-year affiliation between the members of this group.

The Commission, in promulgating its tentative plan, which was, of course, made without hearings or record, announced that it was "put forward to elicit the full record upon which the plan to be ultimately adopted can rest and without pre-judgment of any matters which may be presented upon that record." The Commission has not yet adopted any plan, and could not adopt a plan in advance of and in the absence of a record duly made upon hearings of all interested parties, including both the public and the railroads. For about a year the Commission has been conducting hearings making up the record upon the basis of which the Commission will adopt a plan in accordance with the statute.

Naturally the hearings before the Commission have developed various conflicts of interest. The Burlington, the Great Northern, and the Northern Pacific have urged that their properties should be put in the same system. An important question has, of course, arisen as to what should be done with the St. Paul. The suggestion has been made that it should be put with the Union Pacific. While this suggestion has met the approval of the St. Paul, the Union Pacific has objected to such a solution and both it and the Chicago and Northwestern have joined in urging that they be put together in a system, as recommended by Professor Ripley and as indicated in the Commission's tentative plan. Other suggestions have been made that the St. Paul might be put with the Illinois Central or with the Santa Fe, but none of those interests has supported such suggestions.

It is not the purpose of this article to deal with these or with other conflicts of interest which have been developed in the hearings. The purpose is to discuss the Burlington-Great Northern-Northern Pacific group, and its relation to the public interest and the law. It is believed the facts indicate that those properties should be put in the same system so as to conform to, and in fact promptly effectuate, the purpose of the Transportation Act. Whatever difficulties there may be, and admittedly they are serious, in satisfactorily grouping into systems the other railroads in the West, less unsatisfactory solutions can be found than the disrupting of the existing affiliation

between the roads to which this article relates, as this would create a difficulty more pronounced than any it would avert; it would be a remedy worse than any ill it might be designed to cure; and it would not be a solution at all, because the motive of self-interest on which the law relies would not be invoked.

General Aspects of Large Consolidations

The writer wishes to turn now to a more general aspect of the consolidation problem, but one which has an intimate relation to the question of consolidating the three properties which he has been discussing. At times there have been suggestions that the size of a consolidated system made up of these three properties would be beyond the limits of successful management. On the contrary, the writer believes that in the West, systems of even greater size and scope are not only feasible but desirable. Several phases incident to the feasibility and desirability of very large systems deserve comment in this connection.

The creation of such a large consolidated system would call for new methods of organization which would promote the public interest. Along with centralization in all matters of policy affecting the consolidated system, there should be a process of radical decentralization so as to create on different parts of the consolidated system distinct units of management, each of which would be virtually autonomous except in matters of general policy. The consolidation, instead of making the management more remote from the employees and the public, should evolve methods to create closer contacts in those respects.

We should not visualize the organization of a great consolidated company as merely an enlargement of the organization of one of the existing companies, with the direction of practically all important matters of operation from a single headquarters. On the contrary, we must be prepared for some new concepts adapted to new conditions. We must remember that the last word has not been said about the method of railroad organizations. It is seriously questionable whether, even on existing systems, it is wise to concentrate management into a single central office as much as is frequently done. In this connection it is suggestive to mention the reorganization of the Pennsylvania system, in 1920, into four separate operating regions, for the avowed purpose of accomplishing a salutary decentralization.

When the so-called "Harriman system" was in existence, consisting of the Union Pacific and Southern Pacific lines, there were four or five separate operating corporations, in different parts of the territory covered by the system, each corporation with its own president, and thus a degree of decentralization was accomplished while general policies were controlled from a central office. There is no reason why a large consolidated system formed pursuant to the Transportation Act should not have four or five different regional organizations, each in charge of an officer endowed with as much power as is now enjoyed by many railroad presidents, and each of such officers might be designated as president for the region in question. Such an officer should through his own staff keep in touch both with the employees and with the public in his region, and it is reasonable to believe that such an organization could establish closer contacts with and greater

responsiveness to the needs of the public and of employees than exist at present. Indeed, it may not be unreasonable to anticipate that there may develop in each of such regions conference boards with both public and labor representation, and that through these conference boards there may come about a decidedly improved mutual understanding in local matters and consequently in general matters.

To get a concrete idea of what would really be involved in the administration of very large western systems, attention is called to the following comparison which was introduced in the consolidation proceedings before the Commission by President Holden, of the Burlington.

President Holden thus selected for comparison with the New York Central and Pennsylvania systems one-fourth of all the western lines, which repre-

COMPARATIVE STATISTICS, DECEMBER 31, 1917

	One-fourth all Western Lines	New York Central System	Pennsylvania System
Total Miles—All Tracks	46,805	34,216	25,774
Railway Operating Revenues	$412,166,277	$472,751,660	$458,276,335
Railway Operating Expenses	$274,572,735	$341,731,011	$357,446,455
Net Revenue from Railway Operation	$137,593,542	$131,020,649	$100,829,880
Freight Train-Miles (inc. Prop. mixed)	69,394,068	64,963,214	62,104,285
Passenger Train-Miles (inc. Prop. mixed)	62,733,447	71,264,621	64,688,475
Total Train-Miles	132,127,515	136,227,835	126,792,760
Tons Revenue Freight Originating on Line	115,293,122	126,189,207	183,179,154
Total Ton-Miles (Rev. and Non-Revenue)	40,016,221,176	48,806,143,170	50,004,945,694
Passengers Carried	70,758,067	148,709,375	198,086,035
Passenger-Miles	3,875,008,385	5,455,939,104	5,176,182,538
Number Locomotives	5,995	7,267	7,172
Total Tractive Capacity (pounds)	194,293,747	246,984,878	270,441,840
Number Freight Train Cars	206,007	291,638	270,035
Aggregate Capacity Freight Cars (tons)	7,997,057	11,995,149	13,647,632
Passenger Train Cars	4,805	7,272	7,290
Locomotive Fuel (tons)	14,678,669	15,988,772	16,919,147
Average Number Employees	169,755	196,047	221,074
Wages	$167,212,930	$206,083,186	$237,182,001

sents a larger system than would result from consolidation of the Burlington-Great Northern-Northern Pacific group, with a due proportion of the "weak lines" in the West.

It will be seen that in such tests of administrative capacity as the number of employees, the amount of wages, the number and capacity of locomotives and cars to be designed, bought and used, the amount of fuel and of other materials and supplies to be bought, distributed and cared for, the magnitude would be less in the aggregate on the western system, even if it included one-fourth of all the western lines, than on either the New York Central or Pennsylvania system.

It has been said, however, that these figures merely reflect greater density of traffic on the eastern lines, and that the real problem in the West is the greater geographic extent. But density of traffic is what calls for the greatest administrative ability. The ablest superintendent is placed on the division with densest traffic rather than on the division with thin traffic, though the latter may be much more extensive geographically. Besides, the problem of geographic extent can be met by appropriate regional organization. It is important, moreover, to realize that the geographic scope of a system including the group here under discussion would be no greater than is necessarily contemplated in any effective consolidation of western lines. For example, the Union Pacific-Northwestern system included in the Commission's tentative plan extends from Duluth to Los Angeles and from Chicago to Seattle and has lines in Michigan, Wisconsin, Illinois, Minnesota, Iowa, South Dakota, Nebraska, Kansas, Wyoming, Colorado, Montana, Idaho, Utah, Nevada, California, Oregon, and Washington, besides touching the states of Missouri and North Dakota. Thus, this system would extend through 17 states and touch two others. A system composed of the lines of the Burlington, Great Northern and Northern Pacific, including the Colorado and Southern and Fort Worth and Denver City, would extend into 17 states and, with the addition of a due proportion of weak lines, would be at least as compact as a Union Pacific-Northwestern system. Indeed, if all the lines in the West should be divided into only four systems, there would be but little difference in degree, and no controlling difference in principle, between the extent of such systems and systems already outlined in the Commission's tentative plan.

The further objection has been offered that a serious obstacle to the creation of large western systems is that much new mileage remains to be constructed and that no one management could satisfactorily decide where such new mileage ought to be constructed if the management had such a wide scope of territory to consider. But in view of the extensive scope of systems already included in the Commission's tentative plan, and advocated by railroad interests, the objection is without force. Furthermore, there has never been any serious claim that this objection was a substantial obstacle in connection with other systems, for example, the old Harriman system consisting of the Union Pacific and Southern Pacific lines, or the present Santa Fe system extending from Chicago to the Gulf of Mexico and the Pacific Ocean. Again, intelligent consideration of all these problems would be facilitated by appropriate regional organization.

One of the misgivings which has been expressed with reference to the ability of a consolidated corporation to

turned promptly to the owning carrier, railroad executives for the

decentralize its management to a satisfactory extent has been that the Transportation Act contemplates consolidation of the railroad properties in question into one corporation for ownership, management, and operation. But the consolidation provisions leave unlimited discretion with the consolidated corporation as to how it will develop its organization. The consolidated corporation may have as many virtually autonomous regions in its operations as it sees fit, may give the chief officers of the various regions appropriate titles, create separate staffs therefor, aid them with local conference boards if deemed advisable, and take any steps which it may regard as calculated to render the functioning of the various parts of the consolidated system most efficient and serviceable to all those interested therein as users or employees.

Discussion of consolidation frequently assumes that those who believe in consolidation count upon great economies growing out of the elimination of executive officers and their staffs. It is not believed that any such sort of economy is relied upon to an important extent and this for two reasons: first, any such economy would be a negligible percentage of operating expenses so that significant economies must be found in entirely different directions, and, second, it is highly probable, as above suggested, that the new organization of the consolidated systems, with the necessary separate regions qualified to act with substantial autonomy will call for approximately as much executive organization as at present.

The real economies which will come from consolidation will be far more important in scope and significance. The elimination of switching, the standardization of materials, the concentration of purchases, the sending of traffic by shorter routes, the elimination of interline accounting, the greater ability to utilize shops and equipment on all parts of the system to the maximum extent, all constitute real and important elements of economy. Perhaps one of the most important matters from the standpoints of economy and of improved service will be the fact that freight cars of the system will be "at home" on all parts of it so they can be put at the public service without limitation, and so when in need of repair they can be fully repaired where they are, instead of being sent back to the home line, with possible necessity for various minor repairs away from home to be later discarded or duplicated on the home line.

In viewing this matter, we must realize that the connection between each two railroad companies represents in a sense a frontier between two powers which are foreign to each other. Generally speaking, locomotives and passenger cars do not go beyond that frontier. Freight cars in general do cross the frontier, but when they do so there are generally additional inspection and switching, involving cost and delay, and there must be elaborate interline accounting. Under existing conditions, when a freight car leaves the tracks of its owner and crosses one of these frontiers, it becomes a foreign car and indeed a friendless car. All presumptions are likely to be decided against it in favor of what appear to be the interests of the foreign line on which it finds itself. If it needs repairs, it is uncertain whether it will receive them, unless they are of a character essential to the safety of its operation, and they may have to be discarded or done over when the car gets home. Whether it is moved in accordance with the Car Service Rules prescribed by the American Railway Association, so as to be re-

interchange of freight cars among 13 gional matters which now have to be

turned promptly to the owning carrier, depends upon a great many contingencies, with every question likely to be resolved in favor of the foreign interest which temporarily controls it.

These considerations emphasize that to a very important extent the public interest will be promoted and efficiency and economy in the use of the railroads and their equipment will be increased by diminishing as far as may be reasonably practicable the number of these frontiers, or in other words by putting the railroads into a few large consolidated systems.

One advantage of consolidation is little stressed but is of great importance. The railroads are engaged in a public service. Their success is peculiarly subject to public sentiment and also to the sentiment of the employees. Public sentiment and the sentiment of the employees are greatly influenced by the policies of railroad managements. In many respects railroad policies have to be uniform for the whole country. For example, the policy as to the rules concerning the return of freight cars, and what is even more important the policy as to whether those rules will be in fact enforced, must be a virtually uniform policy for the entire country. Such railroad policies have to be adopted by practically unanimous consent of the railroad executives of the country. At present there are perhaps 80 or 90 separate and independent Class One railroad systems. Anything approaching unanimity among such a large number of executives is difficult of attainment, and it is much easier to secure acquiescence in a negative or stand-pat policy than in a policy involving adjustment to changing conditions. The result is that too frequently the general policies of railroads are halting or negative, not because the majority of railroad executives for the great systems of the country hold to that position, but because the large number of railroad executives and the great variety of the extent of their interests make it so difficult to secure the necessary concurrence in new and affirmative policies. This situation reacts unfavorably upon public sentiment and at times upon the sentiment of the employees and hence reacts unfavorably upon the interests of the railroads themselves, and in the last analysis upon the public interest in adequate railroad transportation.

There is frequent criticism that the railroads show too little initiative and progress in their general policies. It is sometimes claimed this is due solely to hampering legislation. It is in fact due largely to the difficulty of agreeing upon the initiation of progressive policies which results from there being such a large number of different railroad systems, with such extraordinary divergence in size and degree of public contact. A very important improvement in this matter, which has a vital relation to the public support necessary to preserve private operation, would result, if, for example, there were 12 great railroad systems instead of 80 or 90 different interests as at present, (to say nothing of several hundred Class II and Class III Railroads).

The creation of very large railroad systems will simplify the dealing of railroads with each other, because such a method of consolidation will relegate to the internal councils of some one system great numbers of questions which now come up for consideration in the general councils of the railroads. The handling of questions still remaining of general interest will be greatly simplified by the reduction in the number of companies to be consulted. For instance, the due equalization of the

interchange of freight cars among 12 large systems will be far simpler than when 80 or 90 different systems are involved. Indeed, with only 12 systems to deal with, there will probably come about coordinated methods not only of car distribution but of car maintenance which will prove far superior to anything which can be hoped for with 80 or 90 different railroad companies to be consulted in the general councils on the subject; and likewise the situation will admit of very great improvement in controlling the movement of traffic in times of heavy business so as to avoid embargoes, or at least so as to make them much more rare, and, when resorted to, far more useful.

Another important advantage to arise from large consolidations will be the simplification of public regulation. Surely the Interstate Commerce Commission could deal much more satisfactorily with 12 systems than with 80 or 90. It is not unreasonable to anticipate that with such a small number of systems the Commission would find it feasible and desirable to establish branch regional offices which could deal promptly and effectively with many regional matters which now have to be dealt with at Washington. Similar advantages in the public supervision of labor problems could reasonably be expected.

It is believed that with appropriate decentralization within each consolidated corporation, so as to secure sufficiently intensive and responsive local management, the weight of public convenience and of the interest of stockholders and employees will be found to be on the side of the creation of a few very large systems. And the complete consolidation of the Burlington-Great Northern-Northern Pacific group, together with a due proportion of the weaker lines in the West, is believed to harmonize with these broad considerations of public interest, as well as with the definite standards and purposes of the consolidation provision of the Transportation Act; the placing of those railroads in the same system will be merely another step in an evolution which has already progressed far and proved to be in the public interest; and it will insure consolidation in fact and thus stimulate general progress toward realizing the object of the law.

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RAILWAY GROUPING IN ENGLAND

By SIR W. M. ACWORTH

TO the *Economic Journal* of March last I contributed an article giving a full account of the process by which, within little more than a twelvemonth, something like 100 separate companies had been amalgamated into four. One page of this article was devoted to comparing and contrasting the methods of consolidation in England and the United States. I am now invited to enlarge upon certain points of special interest to Americans and to express an opinion as to whether the genius for compromise, which I claimed the English railways had displayed, is likely to be equally conspicuous on the other side of the Atlantic. I should like to say at the outset that, although I have endeavored to keep abreast by reading of the American situation, it is six years since I was last in America and I have, therefore, had no opportunity for that personal contact which teaches one much which can never be learned from a printed page.

The position in England differs in many respects from that in America. We have no states with their separate legislatures. There is one Parliament only, and that Parliament is supreme, fettered by no constitution. Whatever Parliament enacts is undisputed law; the business of the judges is merely to enforce it and not to question its constitutionality. Parliament might enact next week that murder should be punished by a fine of £5 and that a man should be hanged for stealing a shilling; and if Parliament did pass such an enactment it would be good law. And Parliament is not only supreme but can delegate any powers it pleases to a subordinate body, constituted as Parliament thinks fit. In the present case Parliament has delegated, subject to certain general instructions, power to a special tribunal to fix and to enforce without appeal conditions of amalgamation. The tribunal consists of three men, all eminent in their respective spheres. The chairman is a director of the Bank of England, well known in the world of finance. His colleagues are respectively a lawyer and an accountant. I confess that this tribunal seems to me better qualified to deal with the subject than the Interstate Commerce Commission, which is so grievously overworked that it is impossible for the commission as a whole to devote to the matter the attention which it requires. Further, our tribunal can enforce. The Interstate Commerce Commission has no compulsory powers, nor, as I understand American law, can Congress itself enforce. The Government can, as I understand, condemn a railway; that is, it can take possession on paying such terms as a court may decide to be proper, but it has no power to fix the terms on which railway "A" shall sell itself to railway "B," or on which railways "A" and "B" shall combine their undertakings. And the idea of the Government commission acquiring each company separately by condemnation proceedings, and subsequently combining them in some 20 new systems, is surely out of the question. Apparently a combination brought about by this method could begin to function only

the requirements which Congress has if private management ultimately fail-

when the last disputed point raised by the last railway corporation in the proposed group had been finally settled by the Supreme Court.

But apart from the advantage which our flexible and unwritten constitution gives us over your rigid constitution in matters of this kind, the difficulties of consolidation under your legislation are much greater than we encountered. Your Act requires that competition shall be maintained, the idea underlying our Act is that competition shall be restricted. It is true that competition will continue along the frontier lines of the different groups, and that in a good many cases tentacles protruding from the territory of one group intrude into the territory of a neighboring group; but it is fairly safe to say that no such intrusion will be permitted in future, and that, if a group company were to propose to surrender to its neighbor its intruding tentacle—such proposals may well be made in the near future—no objection would be taken on behalf of the public. Further, in many cases highly competitive lines have already been amalgamated; as for instance, the Midland with the London and North Western, the Great Central with the Great Northern, and the Glasgow and South Western with the Caledonian. The belief, now quite commonly held by economists, that railways and other public utilities ought to be monopolies, has obtained greater hold on public opinion here than with you.

There are other obstacles which Congress has placed in the way of those whose duty it is to bring about consolidation. The new competing systems are to be, as far as may be, equal in value of property, so that they may be able to carry at uniform rates. Here no attempt has been made by the State to value railway property. We are content with saying roughly that the property is worth what it can earn, and all our groupings have been carried out on the basis of a valuation not of assets but of the annual revenue which there was reason to believe the assets would earn in the future. As for carrying traffic at uniform rates, it is expressly provided by our Act that each group company shall be given such rates as will enable it to earn its own income. Of course, it is taken for granted that, where two companies compete for the same traffic, they must charge the same rate; but it is contemplated that for non-competitive traffic there may be a higher standard of charge in one territory than in the territory adjoining it. There may, and probably will be, great difficulty in applying this principle in practice, but at least Parliament has not hampered either the companies or the tribunal by laying down any regulation conflicting with it.

Yet again, your legislation provides that the nominal capital of the combined corporations shall not exceed the value of the property of the corporations composing the combine. No such limitation has been imposed here. For example, the nominal capital of the companies composing the London and North Eastern group was before the amalgamation £342,000,000; it has now become £370,000,000, because the ordinary stock—what you call common stock—of the North Eastern Railway was more valuable than that of any of its new partners, and it seemed simpler to give to the North Eastern £160 of the new ordinary stock of the group instead of giving to all the other companies a good deal less than £100.

There is an old German proverb which says, "The best is the enemy of the good." There may be something to be said in the abstract for each of

the requirements which Congress has laid down as to conditions of combination; but this is a work-a-day world, and if there is no compulsion to combine, and there are great obstacles in the way of introducing compulsion, railroad corporations will combine only if both parties to the combination think it to their interest to do so. Evidently the appetite for fraternal embraces is not very prevalent in America at this moment, and it is difficult to believe that it is in the public interest that a question of this kind should be kept simmering for an indefinite period.

It is hard for an outsider to understand the mental attitude of the American public towards their railroads. Five years ago they adopted a policy of federal management. They were urged by two successive Director-Generals to continue the experiment for a sufficiently long period to test the results, but after two years they were so firmly convinced that they disliked State management that they refused to experiment any longer. The alternative to State management would seem to be private management on broad lines of policy laid down by the legislature and subject to the reasonable executive control of expert officials. But the American public does not think so. They appoint to their commissions non-expert persons and remove them, or at least remind them that their offices are terminable, as soon as they are becoming expert. And the legislatures, both state and federal, which are certainly not expert bodies, think fit not merely to lay down broad principles of policy but also to regulate the working out of details by the precise and cast-iron language of an Act.

It is questionable whether private management can be a success under these conditions, but it is certain that if private management ultimately fails average public opinion in America will ascribe the failure not to unwise over-regulation but to its own inherent defects. That the relations of railways to the public should be regulated by public authority seems right and proper, but that does not necessarily imply interference with the relationships of railroad corporations *inter se*. If public opinion thought it desirable that the United States Steel and the Bethlehem Steel Corporations should unite, and if thereupon Congress without compelling them to unite prescribed conditions of union as fettering as those which are to be applied to the railroads, would any business man expect these two companies to do anything except remain separate?

One of the main grounds for the grouping that has been carried out here was the belief that greater efficiency would be secured and large economies in operation would be made. How far this belief will be justified time alone can show. It is questionable whether in the United States an equal field for economy exists. Your great systems are already so large that they have probably secured all the economies which are due to large-scale enterprise. Their equipment is standardized, their division points conveniently arranged, their shops established at suitable centers, and the members of their headquarters staffs have each of them as much as they can do. One can imagine that the absorption of half-a-dozen small concerns into the Pennsylvania or the New York Central might lead to a considerable percentage reduction of expenses on the small lines, while leaving the scale of expenditure on the trunk lines unchanged. And if so, the total expenditure of the combined system would show only a quite fractional reduction.

or draper. This merchant-capitalist farmed out the cloth to different people

From a commercial viewpoint, the chief effect of the Industrial Revolutio-

SIMPLIFICATION: A PHILOSOPHY OF BUSINESS MANAGEMENT

By A. W. SHAW

IN discussions of the present industrial system, much is always said about "productivity." Output, in terms of pounds or tons, dollars or cents, hundreds or millions—per day, per year, or per man—is always quoted to show how great our industrial growth has been. To that absolute accomplishment which figures always attest we point with pride. In particular is this true of those discussions which treat of the history and development of industrial technique and practice. Large-scale production, the adoption of machinery and the expansion of the market, are all cited as evidence of the vastly altered character of manufacture, trade and commerce.

But in all of these discussions, it is the attained and not the attainable results which are compared. We hear much of how output has been increased; but little is said of those forces which hold us back from even greater production. Except for the socialist critics, few have pointed out that despite the comparative grandeur of past achievements, industry and commerce are only very partially realizing the potentialities of both production and market distribution.

For in their very development, the conditions responsible for our present large productivity have bred within themselves factors which substantially retard our economic growth. The important thing which distinguishes the industrial society of today most markedly from that of 150 years ago is not, in fact, its power to produce. It is the organization which has grown up about that productive capacity. And the most significant observable fact about our economic organization today is that it is highly complex, whereas prior to the late eighteenth century, industrial and commercial organization was relatively simple.

The Industrial Revolution of the late eighteenth and early nineteenth centuries imposed a relatively complex structure upon simple methods of handicraft; but since that time, we have witnessed a cumulatively complex development, which has begun to take away from us the fullest possible advantages of large-scale production and the use of machinery. We may briefly consider this development, for deep-seated in it are the economic and business issues that underlie the present trend toward simplification.

II

From the time of the Greeks to about 1765, production methods had changed but slightly. True, in England the Manorial system had given way following the Black Death pestilence and the Peasant's Revolt in the fourteenth century. With the expansion of England's foreign trade the Gild system had been largely superseded by the Domestic system, or *Haus-industrie*. But for the most part production was still carried on in the workman's home and with simple hand tools. It took place, however, not under the sole control and ownership of the individual spinner or weaver, but at the direction of a clothier

far more than offset the results of these rapid rates of turnover.

methods, parts, and processes. In the aggregate, inventories have become

or draper. This merchant-capitalist farmed out the cloth to different people and each group then did its separate share of the work which went to make the finished product. While handicraft economy still prevailed, the master-craftsman no longer fashioned a complete product within the confines of a single shop.

A division of labor by process or operation thus began with the Domestic system. The tools and instruments of production were still owned largely by the workers, but the investment required in goods and stocks was larger, and that was undertaken by the merchant-clothier. He acted as an intermediary between the worker and consumer, who now for the first time were separated—the beginning of a complex system of distribution.

Conditions of production such as these, however, were not to remain long. The inventions of Kay, Hargreaves, Arkwright, Crompton, Cartwright, Watt and Boulton, between the years 1738-1785, drastically modified the entire textile, and subsequently, all other important industries. The results of these occurrences and the social and economic changes which accompanied them we now know as the Industrial Revolution.

The adoption of machine production has exhibited as never before the working of two tendencies of economic evolution. One of these is the increasing use of tools and capital equipment as industrial society advances. The other is the increasing division of labor with which the greater use of capital is nearly always accompanied. Division of labor was intensified beyond all imagination. It became minutely operational instead of merely occupational. And the infinitely greater use of capital equipment has made production less simple and more roundabout [1] than ever before.

From a commercial viewpoint, the chief effect of the Industrial Revolution lay in a great extension of the market. Goods can be produced in large quantities only if a broad market for them can be found. The colonies had already provided a field for the exportation of finished goods in return for the importation of raw materials. But a still larger market was needed and improved means of transportation, developed during the first third of the nineteenth century, made possible a trading area such as we know today.

Today, production and distribution not only take place over a much greater area than previously, but they require infinitely more time to come about. The announcements that an automobile is "made in 30 minutes" and that a ship is "built in 30 days" do not represent actual instances; they hold only if the word "make" is taken to mean "put together." The car that is constructed by modern methods in 30 minutes may actually require, from the obtaining of the raw materials to the time is is run, thirty months or even perhaps three years for its production. Add to this that in a strictly economic sense production is not complete until the article is in the hands of the consumer, and an even greater time may elapse. Actual assembly is rapid, but most production, and many phases of distribution, are roundabout and spread themselves over a very great time indeed. It is true that at some steps in the process of distributing certain lines, stocks probably are being turned more rapidly than ever before; but the added complexities and costs, introduced by the wide variety of services and lines in which both production and distribution have become involved,

[1] See Böhm-Bawerk, Eugen V., *The Positive Theory of Capital* (1891), pp. 17-22.

far more than offset the results of these rapid rates of turnover.

Thus the production of goods and services on a large scale, not to order as under the Gild system, but in anticipation of demand, have, by reason of the large amounts of capital investment required, vastly complicated the conduct of enterprise. In many instances, there is no certainty that the product, after it is made or stocked, can be sold at profitable prices. It seems probable that increasingly, as machinery is utilized for more purposes, and markets become still wider, growth in the amount of capital invested in equipment and resources will continue. The interest charges paid for the use of business capital may be looked upon simply as the price exacted by the roundabout, machine process. We pay it in order to obtain the increased productivity afforded by the use of capital equipment, which in successful instances is so great that it far more than offsets the burden of its hire.

For clearly, through the employment of mechanical equipment and roundabout methods, a larger abundance of goods than ever before has resulted. But true to an accepted economic principle, every increase in this production has caused a greater demand for still more goods, and satisfaction of this added demand, in turn, has given rise to further wants and desires. The thing to be noticed about this demand and the production which has taken place to satisfy it is that a greater number of *different kinds* of products has been called for and produced. Cumulatively, the modern market has come to demand not only a larger aggregate quantity of goods, but, increasingly, a greater variety and assortment of products. And with these highly differentiated products has developed a vast multiplicity of methods, parts, and processes. In the aggregate, inventories have become larger, purchasing more difficult, and accounting complicated. The modern manufacturing or mercantile enterprise is characterized by a diversity of practices, policies, and price-ranges multitudinous almost beyond enumeration. Much of this differentiation of process and product is desirable, but a great deal of it is unnecessary and futile. It is merely the result of a system of production and distribution which has developed exceedingly rapidly in order to keep pace with mechanical progress and which serves an enormously wide and intricate market which producers and distributers have only begun to learn to control.

Such a maze of details, occasioned by a multiplicity in methods and an elaboration of processes, inevitably interferes with the control of business operations. It is not the great number of types and varieties of product, but the complexity of the processes and procedures surrounding their manufacture and marketing, which results in difficulties in administration, diminution of output, and loss of profits. The great variety of colors, sizes, weights, patterns, and types of product constitutes only cogent evidence as to the present involved condition of business enterprise. While it is beyond question true that were variety in types of product generally reduced, tremendous savings would take place, variety elimination *per se* is not the essential part of simplification. The reduction of types and varieties of product is merely an important approach to the general problem of mitigating the complexity present in all forms and phases of business operation.

The essence of simplification as a policy of business management lies in the attempt to conduct all activities and

imum expenditure, all unnecessary industry involved, at which it was

to perform all functions of an enterprise in the least elaborate manner consistent with any given purpose. That thing now termed simplification is in effect a composite. It is a philosophy which has grown out of the experience of business men and the observations of economists who have taken cognizance of certain laws of manufactures and of markets. These observations they have set up in the form of certain principles, and these principles, codified and crystallized into a philosophy of business conduct, now claim the attention of conventions and meetings, trade journals and business papers, general magazines, private conferences, and even of a department of the Federal Government.

III

Business — production, distribution, the facilitative activities of either factory, shop or store—comprises in essence merely the application of motion to materials.[2] Any phase of business procedure involves this element; in fashioning an object, in transporting that object after its completion, or in making the records which accompany or facilitate its production and distribution, motion is the common attribute of these various activities. It is an obvious, but none the less fundamental, truth that in a material sense man creates nothing; he merely shifts or transforms matter so that it shall be more useful or more valuable. Production and distribution thus being merely organized motions, the often-heard phrase, "lost motion" is no figure of speech, but a literal description of just what happens when energy is expended in some direction where it does not yield a commensurate return. Motion, applied to materials in some manner or other, is the essential means by which we carry on business operations, make our livings, and obtain the things which satisfy our wants.

The immediate purpose of any motion, therefore, furnishes a criterion by which it may be tested. If no good purpose for the motion can be found, it is then clear that there is no good justification for its continuance. From the social standpoint, any motion which has no valid purpose is economically useless. It may have the sanction of house tradition or trade custom, but its superfluous character persists and the wisdom of eliminating it becomes plain. From a business standpoint, the effect of the presence of such a superfluous motion, like the effect of omitting a useful motion, is to keep down profits when they might reasonably rise.

The war demonstrated that there are in this country tremendous numbers of purposeless motions in nearly all industries operating upon a large scale. In its efforts to release the largest possible amounts of labor, capital, materials, and equipment for war purposes, the Conservation Division of the War Industries Board[3] had open to it two courses: first, it could merely have curtailed production in the so-called nonessential industries; second, it could have stopped *nonessential uses* of labor, capital and equipment in *all* industries. This latter was the policy chosen. In the attempt to obtain maximum production

[2] For a functional classification of these activities, see Shaw, A. W., *An Approach to Business Problems* (1916), pp. 1-22.

[3] This Division started functioning as a part of the War Industries Board on May 8, 1918. It represented a continuation of the work of the Commercial Economy Board, transferred by the President under the Overman Act from the Council of National Defense, where it had been in operation since its creation, March 24, 1917. For a detailed account of its activities, see Clarkson, Grosvenor B., *Industrial America in the World War* (1923), Chapter XI.

at minimum expenditure, all unnecessary motions were discarded. If a certain type of product, some extra part, a particular process, or a special method was found to be unnecessary, it was promptly eliminated. Stripped for war, the nation's business could not be encumbered by needless complexity.

The results of this pruning down were remarkable. Factories which dispensed with various multiplicities of products and processes, and stores which did away with excessive duplication of stocks, methods and price-ranges, found their productive capacities surprisingly enlarged. Merely by repeating the same motions—by *specializing* on certain practices and products instead of setting up special practices or handling special orders—they operated with a degree of effectiveness previously unattainable. Textile mills increased their yardage, implement factories conserved materials, food-products establishments saved storage and shipping space. Stores and plants in practically all lines of business, from optical goods to fire extinguishers, reduced their unit expenditures for labor, materials, capital and equipment.

Sometimes the saving was accomplished through a reduction of the line, sometimes merely through the elimination of certain practices within the plant or store. The division found, for example, that decreasing the size of the swatches used for samples in the garment trade saved 3,000,000 yards of woolen cloth. In the baking industry, discontinuance of the custom of returns saved 600,000 barrels of flour. In many industries, the substitution of standard for special materials in certain parts of the product resulted in great savings. All of these eliminations took place voluntarily following conferences held with the representatives of every industry involved, at which it was agreed that most of the practices and types of product dispensed with were in large degree unnecessary and wasteful.

The war thus brought vividly to our attention the complexity confronting business enterprise; in all our economic activities, whether of production, distribution or consumption, we are hampered by the unnecessary multiplicity of practices, processes, price-ranges and products. That this complexity exists is, in one sense, not surprising. Our industrial growth has been rapid, and the advantages attaching to the use of machinery have become greater with each new invention and discovery. It has become so relatively easy to make goods that we have come to feel that our slightest whims in either production or distribution are capable of ready gratification. So they are—but only at the unseen cost of an additional product which would be forthcoming if we were less thoughtless in our purposeless specifications.

It is recognized that businesses divide into two main groups, first, those whose frank purpose is to create a custom or semi-custom product, and second, those which produce or distribute staple and more strictly utilitarian articles and services. Of the products of this first class of business, there are relatively few to a pattern. Distinctiveness is the dominant consideration. Demand is relatively inelastic and price is not much of a problem; the market is made up of purchasers whose pocket-books are untroubled by a few dollars more or less. In the second class, the articles made consist of more than several to a pattern. Here uniformity of excellence is more important than are nuances of detail. Demand here comes by no means mainly from the wealthy;

price accordingly becomes important, and costs are a far more vital consideration in the manager's calculations.

Each of these two broad types of business is essentially different from the other. In the first, the demands of the market entail certain methods and equipment; the basic organization of such a custom store or shop is in direct contrast to that of the typical large-scale establishment. Production is mainly still in the handicraft stage; small output of each item allows less use of machinery and is expensive per unit of product. Costs consist of a larger proportion of prime expense than of supplementary charges. Unabsorbed burden, therefore, furnishes no very difficult problem for managerial decision and the whole question of accounting resolves itself very largely into one of bookkeeping. Large-scale production, however, requires rapidity of process and must be relatively cheap per unit of product. To be effective in this kind of work, motion must be repetitive. Special orders are therefore expensive of execution, and their control becomes a more difficult matter. An establishment organized for the second kind of work *can* perform the first, but not so profitably as if it were not so organized.

It is chiefly with this second class of business—the relatively large-scale, repetitive, machine-process enterprise—that simplification is most broadly concerned. Although its application in the custom-type business is frequently possible, by far the greatest necessity and opportunity for its adoption lie in mass-production establishments which make or distribute products falling within this second group. In businesses of this group, the acceptance of special orders invariably interferes with mass production. The habitual countenancing of a multitude of special practices in plant or store results in constantly shifting, time-consuming processes of adjustment, expensive alike in terms of executives' salaries and equipment charges. "Incidents," said Napoleon, "ought not to govern policy, but policy incidents." Since the war, business men have begun to realize this. If the policy of a business is to produce or market an article or a service upon a large scale, and at the lowest price consistent with a given quality, it cannot permit smaller pursuits to divert its productive energies. To do so is to deviate from the fundamental division of labor principle upon which all large-scale, repetitive operation rests.

By no means all business men, previous to the war, can be said to have been oblivious to this. Some few conspicuously successful ones capitalized their cognizance of it to the extent of millions of dollars. Woolworth, Ford, Wrigley, and others have built businesses squarely upon an acceptance of the principle that under modern conditions, industrial and commercial complication and differentiation interfere, while concentration and repetition pay; but until the war focused their attention upon the importance of continuous operation and large output, many executives had imagined any great simplification of their enterprises impossible.

In many cases, competitive necessities had seemed to demand a multiplicity of product. Under such intricate conditions of enterprise as obtain today, however, it is frequently impossible to say whether or not it pays to manufacture or handle certain articles. The difficulties in the way of accurate accounting and cost-finding often make it extremely difficult to tell. Some articles are made at a profit, others are produced and marketed at a loss that is concealed in the general profit which re-

sults from the operations taken as a whole. The increased cost for the latter products may in part be shouldered unknowingly by the consumers of all the products, and the unproductive outlays for labor and material representing the remainder of their cost react to the mutual disadvantage of producer and distributer. Each party to the business body politic—maker, buyer, seller, middleman—suffers loss as a result of the general complexity of business operations.

IV

Following the Armistice, many businesses desired to apply simplification under normal, peace-time conditions, to test better its efficacy as a management policy. Free from their cooperative agreements with the Conservation Division, a number of enterprises retained reduced lines, utilized fewer processes, and continued to employ less elaborate methods in both production and distribution. The results, in practically all cases, have proved highly satisfactory from a purely pecuniary, as well as an economic, standpoint. Not only have labor and materials been saved in consequence of the elimination of purposeless motions in the various activities of each business, but sales have grown and profits increased.

The increases in business volume have come about largely through the decrease in price which lowered costs have permitted. It is an economic principle that for most articles, sold by the second class of businesses mentioned above, demand is elastic. A slight lowering of price results in a more than proportionate increase in sales. Thus a relatively low price may result in far greater aggregate profit than a high one. Small margins of profit, with concentration on a line of relatively few articles turned over rapidly and marketed within narrow price-ranges, may build up highly profitable businesses. Or, in other instances, an increase in volume may have been brought about by the expenditure of a portion of the savings which lower costs have occasioned to acquaint more persons with the uses and advantages of the particular product manufactured.

The extent to which demand is elastic varies, of course, with each commodity, but a very great number of business men are entirely unaware of the large degree of elasticity that characterizes their particular fields and constitutes latent sales capacity. Chance occurrences, in many cases, have been responsible for its discovery. In some instances, an elastic demand has been suspected; but upon actually offering the article and deliberately attempting to extend its market, sales have increased beyond all expectation.

Producing at lower cost, and selling a greater aggregate volume, the enterprise which has simplified its plant or store thus enjoys a double source of increased profits. For besides enlarging its market, it attains internal economies which are cumulative in their effects. Just as the manufacture of goods on a large scale reduces cost and hence permits price reductions which augment sales volume—and the increased sales volume thus attained again conduces to yet lower manufacturing costs—so do the various operating advantages of simplification within the establishment all tend to augment and multiply one another. Suppose, for example, simplification takes place in the variety of product manufactured. The elimination of certain items from the line and concentration upon others then cause longer machine runs and a lowering of unit overhead costs, both through continued

utilization of the equipment and through the avoidance of setting-up expense. But automatically, the standard practice which brings about such savings in production results in other savings outside the operating departments. Stores, accounting and planning departments are inevitably affected; regular, repetitive production entails less expense in the way of record-keeping and the maintenance of various control devices in auxiliary departments.

Better control of materials, simpler accounting methods, and more timely planning and scheduling then result in stabilized operation; which further conduces to lowered costs, better quality product, smaller inventories, shipment that is prompter and delivery that is more dependable. The latter advantages then again result in yet larger sales. Buying in larger quantities obtains still more favorable quotations from sellers. Steady and continuous operation reduces labor turnover and gives the management its pick of both skilled and unskilled labor.

It is the sum total of all of these cumulative, interrelated differentials which counts. In many cases, the saving in any one department may be slight when considered by itself, but the effect which it will have upon the other departments and the savings of the second and third departments in relation to their effects, again, upon the first department bulk large when taken together. The stabilization of all business operations permits better control over costs. A knowledge of costs permits control over sales. Control over sales permits their coordination with production, and the coordination of production and sales results in general stabilization of employment, advertising, promotional and financing operations. Thus, cumulatively, the workings of each step in simplification affect the operations of the entire enterprise.[4]

A philosophy of simplification, recognizing this basic principle of interdependence in business, attempts to question each activity and function as it takes place, and each policy or method as it is proposed. What is the lowest expenditure, the smallest number of clerks, the least equipment, the minimum degree of complexity, with which a given task may be performed, and to how great an extent are standard practices and repetitive performance possible in its execution? Whether the activity be one of buying, of manufacturing, or of selling, what in every instance is the *simplest way* in which a specific purpose can be accomplished? That way, if other things are equal, will be the most productive.

Only sometimes has this simplification been one which commences with types and varieties of product. The retailer who, scanning statistics of his sales grouped according to the prices obtained, discovered that 75% of the differentiation in his prices was unnecessary, and eliminated all but the four or five most popular, applied simplification just as truly as if he had eliminated actual products from his line. The merchant who went a step further, and arbitrarily set up a series of selling prices and markups for each department, forcing his buyers in every purchase to meet the resulting requirements, has applied simplification. The retailer who so rearranged his sales-handling equipment that registers, transmission installations, and tills were interwoven to a nicety which made it possible for his employees to accomplish more with fewer motions, applied simplification. And the merchant—if

[4] Cf. Shaw, A. W. *An Approach to Business Problems*, pp. 15-16: the "principle of cumulative differentials."

he exists—who, in addition to applying all these and all possible similar advances to eliminate the ineffective expenditure of effort, has concentrated all his sales into one or two prices, might be said completely to have used simplification.

The manufacturer who systematized a great miscellany of measurements and specifications on his patterns into a comparatively small list has applied the part which technical standardization plays in simplification. His office manager effected a similar economy when he standardized letter formats and instructed the stenographic force in their use. The expert who observed in the manufacture of hosiery that the machines did not work exactly to the sizes to which they were set and suggested to the hosiery manufacturers that they grade to sizes from the output of a comparatively few set-ups, thereby bringing about a very considerable reduction in manufacturing costs, applied simplification. The manufacturer who profitably reduced his line 80% applied that phase of simplification which has to do with the elimination of unnecessary types and varieties. And the manufacturer with a product of extremely limited variety and price range—such as Henry Ford, for example, although he perhaps might be the last to lay claim to having eliminated all useless motion—who, in addition to having narrowed product and price-range, has reduced to a minimum the complexity present in all departments of his factory, has made a complete application of simplification in production.

But just as the activities of any one business are all interrelated, so are those of production and distribution in different enterprises connected. It is conceivable that the manufacturer who distributes through branches or exclusive agents might establish a complete and unified application of simplification from the point of production to the retail counter. To date, it is not known that this has actually been accomplished. It has, however, been suggested in several lines of business, and one manufacturer, having first applied simplification in production, recently proposed joint action in the matter at a convention of the company's dealers. It is to be hoped that the number of such efforts will continue to increase. In many situations no great degree of simplification of types and varieties in production is practically possible without first securing the cooperation of the distributer in placing his orders for those ranges and types of product which are most profitably made and carried.

V

The movement towards simplification has now gone beyond the individual business. So insistent has been the call for continued promulgation of the wartime conservation policy that the Department of Commerce, under Secretary Hoover, has created a Division of Simplified Practice. Since its inception the Division has presented the general subject of simplification as a business policy to over 150 industrial groups which have requested information or aid. At time of present writing, many of these industries have appointed Simplification Committees which have made, or are now engaged in making, surveys, and already the Department, in cooperation with the industry, has effected definite simplification in several lines.

The Department's activities, it should be noted, are purely cooperative in character. It orders nothing, it dictates nothing; the initiative must come from business itself. The Government in no

way regulates; it merely aids the industry to accomplish whatever mitigation of complexity may profitably be possible. The adoption of any steps which may be recommended in conjunction with the committee after the survey is strictly voluntary on the part of the business represented.

Representatives of any trade or industry come to Washington and consult with the Department on the possibilities for simplification in their particular businesses. Questionnaires are sent out, and the information is carefully tabulated and interpreted. Other conferences follow, and a general plan acceptable to all groups is prepared. When this is so revised and adjusted as to be acceptable not only to the manufacturer, but to the distributer and to the represented consumers, there issues a Simplified Practice Recommendation. On this official Recommendation are printed the names of the manufacturers' associations or committees responsible for its content and the acceptance of the associations or committees concerned. Each establishment in the industry then individually accepts or rejects any or all of the proposed steps at its discretion. Provision is also made for Revising Conferences on future dates, both to check upon the practicability of the steps that have been adopted and to propose whatever modifications changed conditions of trade may require. Thus the Department stands not alone in an advisory relationship, but as an actuating influence for closer cooperative action.

A hundred and twenty-five different groups, engaged in 90 different fields of production and distribution, are now using this service in developing definite steps toward the simplification of their particular activities. As an example of what can be accomplished in this way, there may be cited the instance of paving brick. In 1921 there were manufactured 66 varieties of brick, most of these purposeless and expensive differentiations. On November 15, 1921, as the culmination of a period of investigation and conference, a number of manufacturers, together with the users of paving brick, met with Secretary Hoover in Washington and by voluntary action eliminated 55 of the 66 varieties. It was agreed that none of the 55 varieties eliminated served any valid purpose. On March 27, 1922, at a second conference, four more types were eliminated, leaving the total number of approved types only seven, which was considered ample to care for all needs of the consumer.

Conclusive proof of the relative ease with which the elimination has been accomplished is afforded by a report of the National Paving Brick Manufacturers Association dated March 27, 1923. In 1914, the seven varieties which are now retained and approved by the industry constituted 57% of the total shipments of brick. Since that time they have shown a constant gain, and in 1921 constituted 85.8% of the total of all shipments. That both industry and public are better served is obvious.

The 55 types eliminated in November, 1921, constituted, in 1914, only 40.9% of total shipments. That is to say, 11 types out of the whole 66 which existed in 1914 made up 59.1% of the total quantity of bricks sold. In 1919 these 11 types constituted 81.6% of all bricks sold, and in 1922, after the stamp of approval had been put upon them by the industry, made up 94.8% of total sales. The 55 types discouraged in November, 1921, thus made up only 5.2% of the total shipments for the whole brick industry in 1922, showing there was little need for their retention

by the manufacturers who wished to concentrate in production and market their product most profitably through the elimination of purposeless business practices.

VI

This, then, is the thing termed simplification: a philosophy which strictly discourages all unnecessary motions in business. It has its basis in both the multitude of diversified products and the great number of highly differentiated manufacturing methods and distributive practices that, in an advancing civilization, result from increased productivity and ever-widening markets.

Quite properly, in its pioneer stage each commodity runs the gamut of various types and patterns, shapes and sizes, in finding those best suited to its purpose and market. After these are established, however, useless differentiations tend to persist. As we swing into each new field of production, that field, for the time being, gives play to the human desire for ostentation, variety and luxury; but as time goes on, those desires center themselves in new devices and commodities, leaving behind a number of types and varieties of product which ordinary economic processes only slowly, if ever, eliminate.

This development is paralleled by needless complexity and indirection in production methods, marketing practices and the general minutiae of control. Unnecessary motions become imbedded all along the routine of making and selling. There results a possibility for a dual combing process, and it is in it that the opportunity for real simplification lies. To obtain an increased output from fields already being worked, and to free our productivity for enterprises in new fields, a conscious overhauling is periodically required.

On the one hand those types and varieties which have been demonstrated ineffective should be weeded out as rapidly as possible. Once the pioneer stage in the production of any variety or type of a commodity is past, it should be subjected to a scrutinizing survey, rather than to wait on the slow processes of natural elimination. On the other hand, all unnecessary practices in connection with manufacture and sale—in purchasing, in fabrication or processing, in storage, in shipments and deliveries, even in finance and accounting—should be discountenanced with equal vigor. As the conditions of trade or manufacture change, scrutiny should be repeated, to detect again any unnecessary motions. Finally, all new steps proposed should be carefully examined and critically challenged in the light of whatever added complexity to operations or processes they may entail.

So far as diversity of products may be involved, simplification is not hostile to any styles or varieties of product which appeal to the public fancy. It aims, first, only at eliminating those varieties and types which do not serve even a semi-frivolous purpose; and it aims, also, at giving to the non-frivolous elements in the population a chance to purchase articles of sound utility at minimum prices. And, secondly, by eliminating all unnecessary steps and practices in the productive, distributive and facilitative activities of each plant or store, simplification aims, further, at giving to the entire community an increased volume of goods and services and a higher standard of living.

A PROBLEM IN JOINT COSTS

By WILLIAM MORSE COLE

THE most interesting problems in accounting arise in connection with what the economist calls "joint cost." Many of these are in the field of "distribution of overhead," as the business man usually expresses it, but occasionally one finds such a problem in connection with what at first glance appears to be a direct cost. These problems are interesting because very often no solution can be so convincing that all others are eliminated by it. Some other solution always looks almost, if not quite, as good.

By way of illustration, let us consider for a moment the cost of sorting agricultural produce into grades. Suppose, to make the case simple, we have an unsorted lot of apples, to be sorted into first quality, second quality, and culls. How shall we divide the cost of sorting among the various grades, so that we shall know what each grade cost us, and thus learn the comparative profitableness of dealing, for our market, in each grade?

Some Tentative Methods

The obvious suggestion, in line with methods used in other connections, is that the total sorting cost be distributed on the basis of time: that the time spent in picking out each grade be charged to that grade. This sounds good until we realize that if first-quality apples largely predominate, they won't be picked out at all, but will be left, and the others will be picked out from among them; and under this plan all the cost of sorting will be charged to the two poorer grades. Similarly, if seconds predominate, the first and culls will be picked out, and they alone will bear the cost. It is obvious that a plan which gives results differing so widely, not merely in degree but in kind, with a mere chance difference of circumstance, is at least questionable.

Another obvious basis for distribution is bulk. This sounds good until we realize that in circumstances under which culls largely predominate, this method makes the culls bear most of the cost, and we at once wonder whether under this plan the culls are charged for the cost of sorting as a kind of penalty-charge (penalizing them for being culls) or as a value charge (because sorting has added to their value). The practice of charging things as penalty is not good accounting, for it dilutes figures that are more useful undiluted, and certainly sorting has not added to the value of the culls, for no one will pay more (at least by the cost of sorting) for things which he knows to be straight culls. This plan is hardly more convincing than the other.

The next basis to suggest itself is value. If, for example, the sorting shows so many bushels of first-quality apples that at the market price they are worth $500, and so many of the second quality that they are worth $200, and the culls are worth $50, this basis adds the three values together for the denominator of a fraction, and charges 500/750, or ⅔, of the sorting cost to the first quality, 200/750, or 4/15 to

the second, and 50/750, or 1/15, to the culls. This makes use of both relative quantity and relative value, for it makes up its fractions from the product of the two. This sounds good until someone objects that we are trying to find *costs*, not values; that costs are independent of values, and that cost figures must not be influenced by selling or market figures, for the purpose of getting cost figures is in part to compare them with selling figures; and that allowing selling figures to influence cost figures is to render the comparison, to that extent, worthless.

Though many other plans may be suggested, virtually all of them come down in the last analysis to variants of these three—time, bulk, value. It is obvious that we must go farther in our analysis before we can choose between them. Then this question arises: if we bought our apples as a lot, for a lump sum, shall we, or shall we not, distribute our cost of sorting on the same basis that we shall distribute our original purchase price, for the lot, over the different grades? And this in turn raises a new problem. Suppose we paid $600 for the lot unsorted. How are we going to distribute our purchase price over these grades—on the basis of bulk, of market value, or on some other basis?

As a matter of fact, though time, bulk, and value, as we have seen, are the chief possible bases for sorting, for the produce itself various other bases, or considerations connected with bases, must be noted. In order to bring in these other considerations, we may well change our illustration, and get temporarily into another field where the situation is not so simple.

This new case involves virtually all the considerations that can arise in connection with a problem of this sort, and that is why it is chosen. It is obvious, therefore, that it must be fairly complicated.

The Problem in More Complete Form

A chemical company produces by the same processes two products: that is, the cheapest way for this company to produce either product is by processes which also produce the other—as is common in the chemical industries. The cost of the joint product is $51 per ton, and it comes through the processes as ¾ ton of product A, and ¼ ton of product B. The company sells product A in competition with other manufacturers; but it is the only producer of product B in large quantities, for its processes for producing the joint products are secret. It sells half of product B direct from the regular manufacture, but the other half of B it carries through other processes, requiring no additional materials, to make a new product C at an additional cost of $18 per ton. The company sells product A at $80 per ton, B at $32 per ton, C at $60 per ton; and the selling costs are: A, $2; B, $3; C, $4. Although the company has a monopoly of B and C, it has found that any attempt to force up the price of either product reduces the demand so much that its production is not carried off and net receipts are reduced. It could sell all its production of B (at $32 per ton), but the public demand will take only one-half of the production of B in the developed form of C, for which the firm gets a relatively higher price ($60 per ton). This further fact is known: if the chemical elements which ultimately go into the compound products were purchased in the free state, as pure sulphur, pure phosphorus, and so on, they would cost, per ton of A, $90, and, per ton of B,

$120. Our problem is to find the cost of A, of B, and of C.

The methods that suggest themselves for finding these costs may be treated as of six types (for any others are mere variants of these), all of which, of course, divide the $51 of joint cost between A and B, and then add the special costs for A, B, and C. These six types of methods for distributing the joint cost may be classified as follows:

(*a*) in the ratio of the cost of constituent elements

Cost of elements in each		Per cent of total	Share of $51
A ¾ ton at $ 90 =	$67.50	69	$35.34
B and C ¼ ton at $120 =	30.00	31	15.66
1	$97.50	100	$51.00

Method (a) — Cost of constituent elements

Weight of each		Per cent of total	Share of $51
A ¾ ton		75	$38.25
B and C ¼ ton		25	12.75
1		100	$51.00

Method (b) — Weight

Selling price of each product		Per cent of total	Share of $51
A ¾ ton at $80 = $60.00			
Less selling cost. 1.50			
Net yield	$58.50	89	$45.39
B ¼ ton at $32 = 8.00			
Less selling cost. .75			
Net yield	7.25	11	5.61
	$65.75	100	$51.00

Method (c) — Selling price

	Share of $51
Yield of B, ¼ ton at $32 = $8.00	
Less selling cost. ..... .75	
Net $7.25	$ 7.25
Balance chargeable to A.....	43.75
	$51.00

Method (d) — B as a by-product, used to reduce cost of A

Yield of B, ⅛ ton at $32 = $4.00			
Less selling cost.....	.37½		
Net		$3.62½	
Yield of C, ⅛ ton at $60 = $7.50			
Less add. Mfg. cost $2.25			
Selling cost	.50	2.75	4.75
Yield of B and C, net.....			$ 8.37½
Balance to A			42.62½
			$51.00

Method (e) — B and C as by-products, used to reduce cost of A

Yield of A ¾ ton at $80 = $60.00		
Less selling cost.....	1.50	
	$58.50	$58.50
Balance to B and C, a credit, or a cost of *less than nothing* by.....		7.50
		$51.00

This $7.50 remains to divide between B and C; but as that puts us back to our original problem, we will split it tentatively between them by weight, one-half each, for the purposes of the next table.

Method (f) — A as by-product, used to reduce cost of B and C

(*b*) in the ratio of weight

(*c*) in the ratio of selling prices

(*d*) treating B as a by-product, and subtracting the net yield of B from the joint cost

(*e*) treating B and C as by-products, and subtracting the net yield of both from the joint cost

(*f*) treating A as a by-product, and subtracting the net yield of A from the joint cost

The best way really to understand any of these is to try it out with figures. While we are about it, too, we might as well see what profit each method shows for each product and for a total. Certain fundamental figures we will observe first, as involved in the situation.

Typical Methods Applied

Each ton costing $51 yields the following: ¾ ton of A, which costs $1.50 to sell (¾ ton at $2), and sells for $60 (¾ ton at $80); ⅛ ton of B (not converted into C) which costs 37½ cents to sell (⅛ ton at $3), and sells for $4 (⅛ ton at $32); and ⅛ ton of C, converted from B at an additional cost of $2.25 (⅛ ton at $18), which costs 50 cents to sell (⅛ ton at $4), and sells for $7.50 (⅛ ton at $60).

The tables in the boxes on this and the preceding page show how the $51 of joint cost is divided between A and B under each of the six methods indicated above.

Now let us see what profits are

	Method					
Product A	*a*	*b*	*c*	*d*	*e*	*f*
Share of $51 joint cost	$35.34	$38.25	$45.39	$43.75	$42.62½	$58.50
Selling cost	1.50	1.50	1.50	1.50	1.50	1.50
Total cost	36.84	39.75	46.89	45.25	44.12½	60.00
Sales	60.00	60.00	60.00	60.00	60.00	60.00
Profit	$23.16	$20.25	$13.11	$14.75	$15.87½	$ 0.00
Product B						
Share of $51 joint cost*	7.83	6.37½	2.81	3.62½	3.62½	—3.75
Selling cost	.37½	.37½	.37½	.37½	.37½	.37½
Total cost	8.20½	6.75	3.18½	4.00	4.00	—3.37½
Sales	4.00	4.00	4.00	4.00	4.00	4.00
Profit	—4.20½	—2.75	.81½	0.00	0.00	7.37½
Product C						
Share of $51 joint cost*	7.83	6.37½	2.80	3.62½	4.75	—3.75
Add. Mfg. cost	2.25	2.25	2.25	2.25	2.25	2.25
Selling cost	.50	.50	.50	.50	.50	.50
Total cost	10.58	9.12½	5.55	6.37½	7.50	—1.00
Sales	7.50	7.50	7.50	7.50	7.50	7.50
Profit	—3.08	—1.62½	1.95	1.12½	0.00	8.50
Total profit A, B, C	$15.87½	$15.87½	$15.87½	$15.87½	$15.87½	$15.87½

* In every case except (e) the figure is half that shown for B in the calculation for distribution, for B and C use each one-half B's original product.

yielded for the various products by these methods, which, it should be observed, all deal with the same conditions (the same actual costs and the same actual selling prices), but differ only in the distribution of the costs among products.

It should again be noted that all methods give the same total or net profit for the three products, and therefore we have not by changing methods affected ultimate net results; but we have very noticeably affected the apparent profitableness of different products. A ranges in profit from $0.00 to $23.16; B from a loss of $4.20 to a gain of $7.37½; and C from a loss of $3.08 to a gain of $8.50. Clearly these cannot all be right. Equally clearly, in this particular case, the matter is of little importance, for we cannot cut out the apparently unprofitable products without cutting out the profitable ones also, and so it pays to continue manufacturing whatever cost distribution method we adopt. Yet usually a correct distribution of joint costs is essential to the correct guidance of the business, for otherwise we may be continuing an unprofitable line that we might cut out if we knew it to be unprofitable.

Typical Methods Analyzed

Let us examine these methods in the order in which they show large or small differentiation in profitableness between products. Method (a) shows the largest difference. It uses constituent elements in the free state, as a basis. It is apparent that since all the costs included in the $51 are joint, for both products went through all processes together and all costs came out in the two products jointly, the only respect in which these products have not shared alike in the services rendered to them is their chemical content. One may have more valuable materials than the other, for the chemical processes may have caused the valuable materials to go to one rather than to the other; but the cost of getting them to go there, the cost of processes, was quite as much a cost of getting the other materials to go to the other product. Then if the pure substance of one would cost if bought independently $67, and of the other $30, apparently the elements there in the end are there in that ratio. That is undoubtedly true: the elements, as abstract uncombined substances, are there in that relative value; but as a matter of fact the values of those elements in the free state bear no relation to the cost of the combination of those elements in the particular substances produced by the factory, as is shown by the fact that the cost to the factory was so much less. Elements in combination may be worth very much less than in the free state, or very much more. Common salt is one of the cheapest chemicals in the world, but its constituent elements in the free state, sodium and chlorine, have relatively high commercial value. To divide the joint cost of A and B on the basis of their uncombined constituent elements is to keep accounts not to show what did happen, but to show what might have happened—what, in fact, never would happen—and therefore has no bearing on the present problem. The reason, presumably, that this method shows a loss for B and for C is that it has charged them for costs never actually incurred.

The next method is (b). This divides the $51 by weight. All costs start together on A and B, continue together, and result in two products, of which one is three times the other in quantity. It appears then, that three times as much of the cost has gone into one as into the other. This sounds good until one wonders whether by the same reasoning one could not use bulk as well as weight. What does one buy when one buys raw material, and what does one try to get when one incurs expenses? If one is seeking mere weight, weight is a good basis for distribution of cost; but it is not if one is seeking mere bulk. Weight is virtually never an end in itself except for ballast; and bulk is virtually never an end in itself except for packing or filling. It would be rather absurd, for example, to divide the cost of silver-lead ore between silver and lead on the tonnage basis, and charge, say 200/201 of it to lead if it ran two hundred tons of lead to one ton of silver. This basis looks suspicious. The loss on B and on C may be due to an overcharge on the weight basis.

Next in order comes (d), with all loss eliminated and profit shown on two products. This treats B as having no place in the intended scheme of production, but lets it stand as a necessary factor, unavoidable, in the production of A and C. It is made tributary to them. We may as well consider (e) and (f) with (d), moreover, for they

all use the same principle—counting one product contributory to another. This is a common method of handling by-products, letting all the proceeds of the by-product apply to reduce the cost of the main product. Here, for example, in (d) B is considered a by-product but not C, in (e) both B and C are treated as by-products, and in (f) A is the by-product. In (f) we get the curious situation that so much is received from the sales of A, which is the main product in both weight and value but is not necessarily the main product in the intent or aim of the business, that both B and C show a profit of more than the selling price—that is, A has already brought in more than the whole cost of the joint product and so the main product B actually under this method starts its career with a credit balance, as if B cost less than nothing.

Doubtless some will say that A can not be a by-product in this case. What determines the line between main- and by-product? Is it weight, bulk, value, or the aim of the business to make a particular commodity rather than a commodity that, by chance, comes along too? Clearly it cannot be weight, for often the quasi refuse is heavier than the principal product and brings an insignificant return. Bulk is no better. Value comes nearer to it; but sometimes a business specializes in a particular product, builds up a reputation for it, cares mainly about it, and yet sells more in value of some other product that, for one reason or another, goes along with it. Clearly the minor product in value then would be the main product in fact. In other words, the line between main- and by-product may exist only in the mind of the owners of the business. If, then, we are to divide our joint costs between products on the principle that the by-product shall be used to reduce costs for the main product, we shall use method (c) or (d) or (e) according as we *think* of each of our products A, B, and C, as main-product or as by-product. A change of mind, a change of interest, a change of policy will make the following differences: between a gain of $15.87½ on product A, out of every ton of gross product, and a gain of nothing at all; between a gain of $7.37½ on product B, and nothing at all; and between a gain of $8.50 on product C, and no gain at all —and yet everything except the *state of mind* of the owner, or manager, or accountant, is the same in all cases, for the *actual costs* and the *actual yield* are unchanged throughout. This is rather absurd.

Let us now examine method (c), which gives the least difference in the profitableness of the different products —indeed it is the only one which shows them all profitable. Our first question at once arises. Should all these products show a profit, as a matter of principle? Is it only by chance that here they do? This is worth attention, for it involves a more or less fundamental principle.

The Principle Involved

An illustration of the economic principle of joint costs is involved in the stock question, "Which half of a pair of shears does the cutting?" If you rest one blade of the shears on a table and then, keeping it rigid, move the other blade, can you say that the moved blade did all the cutting? Obviously if one blade moves, the very rigidity of the other blade did one-half of the cutting; for the rigid blade must have resisted as much as the moved blade pushed. It is difficult to escape a similar conclusion about joint costs and

profits. If the profits are made from joint operations, they are made by *all parts* of those joint operations—supposing, of course, as we find here, that the processes are really joint, i. e., inseparable. You can no more eliminate one product from the profit-making than you can eliminate one blade of the shears from the cutting. The bulk, and the weight, and the value, and the intent of the manager, cannot eliminate the fact of the "jointness" of the profit if the processes that produced the total value of goods sold at a profit were themselves *joint*. A realization of this eliminates methods (d), (e), and (f), outright; for this principle denies that in determining costs, whatever we may do as a matter of sales policy, we can make any part of a *joint* yield tributary, and merely tributary, to other parts.

Next we are faced, if we accept the principle of joint profits, with the problem of dividing the cost between the joint products so that all, if any, will show a profit. In the case of the shears, we had an obvious fifty-fifty division not merely because we had two factors, but because we had two similar or equal factors. Here we have factors unequal in weight, in content, and in selling value. Of this inequality we must take cognizance. What is a better criterion of the value that has gone into anything than the value that comes out (supposing the thing is not more or less self-developing, like agricultural products)? And what is cost but the value that has been put in? If the value is there, it is there because we put it in; and if one of the joint products has twice the value of another, the reason must be that into that product went twice as much of that which gives it value: and since the things which went into it are our costs, twice as much of our costs went into it as into that other. This is the principle of method (c), which we may call the principle of relative yield.

We have still one point to observe. We saw, with respect to our sorting cost for apples, that we must not let our selling price warp our cost figures. Let us see just what this means. We must not think a thing cost more than it did merely because we can sell it for more, nor must we charge it less for cost merely because it "cannot stand the charge." The purpose of cost accounting is to find the facts—it is not a game of manipulating figures so as to make a good showing. The only good showing it knows is a true showing. Charging "what the traffic can bear" is not an accounting motto. In our problem here, however, we are not concerned with finding absolute costs: absolute cost is known—$51 per ton. We are merely trying to find where that fifty-one dollars' worth of cost went. All the costs that made up the $51 went to create, with the additional costs and the profits, the value that came back in sales. When we distribute them according to the value as disclosed by sales, we are not letting selling costs influence our judgment of absolute costs: we are merely dividing a figure of cost, for which we can find no other basis for division so satisfactory, on the theory that it presumably put value into the product in the same ratio that the value came out.

Testing the Principle

A change in the relative selling prices of these products, obviously, will under this method affect our figure of cost for each (but not total cost, of course). This is as it should be. If prices change relatively, the value of what is *in* the products has changed; and hence the relative values of what we have put

in, or our relative costs, have changed. The total of what we have put in may not have changed, but the value of these separate things (raw material, machine processes, labor, and so on) that we have put in may change with changes of demand or of general conditions, and so the three products, A, B, C, having different shares of these things, have new relative values. It is not violating the principle of relative yield to distribute the joint costs on the basis of relative selling values as of the time when the costs were incurred; but since the costs were incurred for the purpose of getting them out, with a profit, at a future value, it seems more logical to use that later value.

It should be admitted, outright, that there are conceivable conditions under which our theory apparently will not match exactly with the facts, such as when, though our labor is for joint product, we could by very careful time study and physical experiment and chemical tests discover that the labor element in some process actually produced more result on one product than on the other, relatively to weight or value or bulk, and therefore we have a more scientific basis for division of costs than that given above. It is obvious, however, that the moment we by analysis find the actual portion of labor, material, and so on, going into each of two or more products, that moment our costs cease to that extent to be joint in the true sense. By joint costs we mean those which are inseparable—either actually, or for practical purposes (as when the cost of separation would be prohibitive). For those, it is hard to get away from the fact that joint costs are in the product in the same ratio that they come out (after allowing, of course, as we have done above, for costs not joint, like the additional manufacturing costs in C, and the selling costs), and that any excess yield is a profit attaching to all the joint products in the same relative proportions.

In the case of our problem, the fact that there is no competitive market price for B and C does not alter the principle. The value that we get out comes from the value that we put in, plus a profit, and if we get a relatively high price for our monopoly product and a relatively low price for our competitive product, the things that we put into our monopoly product are relatively more valuable *for our purposes, ipso facto,* when they go in, than those that go into our competitive product, and hence should bear a larger *share* of the total cost—i. e., they should bear more and the others less of the total actual cost.

Under an extension of this principle the distribution of the $51 of original joint cost should not give equal shares to B and to C, but should take account of C's relatively greater yield; but in the table above this was not done, for at that point it would have unduly complicated the illustration. When that adjustment has been made under method (c), taking the yield of B as ⅛ ton at $32 less expenses, and of C as ⅛ ton at $60 less expenses, A takes $44.37 of the $51, B $3.06, and C $3.57, and the relative profits are correspondingly affected.

This principle of relative yield has application in many and various fields. It is particularly useful in chemical and mining industries, and in agriculture and the treatment of food products. The cost of a hide, for example, must often be divided between the grain and the split leather.

We may now well revert to our original illustration of joint costs—the sorting of apples, and the cost of the apples

themselves. It is obvious that if we adopt the principle of relative yield, here set forth, the original cost of the apples, $600, will be divided in the ratio of 2/3, 4/15 and 1/15, their relative selling values; and we now reject the criticism that costs must not be affected by selling prices, for we see that the *distribution* of *joint* costs, though not actual costs, must usually be so affected. When we turn to sorting, however, we may not be willing to go so far. To distribute the sorting cost in the same ratio is to assume that the sorting contributes relatively as much to the value of the culls as it does to the grade apples. This is not true. Indeed, both the aim and the accomplishment of the sorting is to bring out, to differentiate, the value already in the grade apples that is not in the culls. The sorting contributes to the value of the better apples only; and hence the cost should be borne by those two grades only, and should be divided in the ratio of the selling prices (after allowing for the expenses of selling). In this case, both original purchase and sorting cost are true joint costs.

If it can be shown that sorting adds more relatively to the value of the first-quality apples than to the value of the second quality, our problem at once changes character. Then we know the relative value of first-quality and second-quality apples, both sorted and unsorted (a price fixed before sorting but to be paid on what is found as a result of sorting). This gives us a new set of figures for our joint-cost distribution. The cost of sorting has a direct measurable result in an addition to selling price. If sorting costs us $50, and adds $75 to the value of the first-quality apples and $25 to the value of the second quality, obviously three-fourths of the $50 is chargeable to the better grade and one-fourth to the poorer.

Many variations of this principle appear in industry, and it is always interesting to recognize them and make the necessary adjustments to eliminate the portions of cost which are not joint, and then apply the principle of relative yield to what remains. Indeed, it is this sort of thing that makes the work of an accountant full of variety and interest, for new situations are constantly arising and new principles must be found—or old principles must be recognized in new guises.

INDUSTRIAL RELATIONS MANAGEMENT

By WILLARD E. HOTCHKISS

IT is now many years since the late Frederick W. Taylor gave scientific setting to the thought that management should plan work and workers do it. At about the same time that Taylor and the engineers were heralding scientific management, efforts to approach labor from the service angle were being organized here and there in the form of so-called "welfare work." In individual cases in which details were handled with wisdom and skill these early approaches, each in its way, met with some cooperation from groups of workers. Both, however, called forth emphatic opposition from organized labor. In several historic cases, welfare activity figured as a direct stimulus to unionization and conflict.

Employment management, the next logical step in the development of labor policy, represented to some extent a convergence of the scientific with the human approach. Unlike many schemes which have proceeded merely from a vague desire to progress, employment management was supported by a definite business motive, later augmented by public necessity. Attention given to labor turnover in the decade before the war revealed large items of cost from this source, which it was shown could be greatly reduced by wise selection and placement. When the war came and produced acute labor shortage, turnover became a national menace.

Under stress of war emergency, employment-management courses were organized and a multitude of "hot-house" employment managers were hastily fed into industry with but little reference to previous policy or condition in the concerns to which they came. The business boom following close on the armistice again stimulated turnover and furnished a motive for continuing much of the war-time arrangement. In these circumstances employment management was kept in the foreground and its stability as a new element in labor policy was considerably overestimated. Many of the individuals who were nominally in charge of the employment function likewise were given somewhat inflated valuation. Business collapse in 1920 and 1921 for the first time subjected the new activities and the new personnel to critical test; in the ruthless wake of deflation much of the war-time structure, wheat and chaff alike, went into the discard.

But liquidation left a large balance of progress. For employment men who had a background of ante-bellum study and experience the war was a new challenge to which, by and large, they responded with distinctive achievement. Besides, the war brought many men of parts into the field and some of them came in contact with thoughtful executives who under proper stimulus could be led to regard labor from a fundamental, long-time viewpoint. In numerous cases of this sort constructive industrial relations policy became grounded on solid and lasting foundations much earlier than it could have done under normal conditions.

Employment management before and during the war was a useful avenue of approach to industrial relations, but it was only an approach. The word

"management" in a title does not make an executive; employment managers who lacked either the opportunity or the personal force to exert substantial influence on policy, in case they survived deflation, have become essentially chief clerks of divisions rather than heads of departments. On the other hand, some of the employment men who commanded a functioning contact with those management councils in which policy and administration are determined, developed their influence and authority far beyond the original concept of their task. This larger outlook left the employment function in the position of a technical service largely dissociated from basic policy.

Reference to scientific management, welfare, employment management and experience during the war suggests the background upon which the "service" and "labor departments," the "industrial relations" and "personnel management" of present-day discussion and practice have developed. Among these and other labels in current use the term "personnel management" doubtless implies the most definite and far-reaching acceptance of management responsibility. It likewise best reflects the progress achieved to date and preempts for future cultivation ground to be covered in applying scientific standards of analysis and performance. For the present discussion, however, the author has preferred the title "industrial relations management" because somewhat more than "personnel management" it seems to suggest emphasis on the reciprocal elements in the subject-matter to be discussed. This emphasis, however, is wholly consistent with the assumption of management responsibility and with the analytical outlook which attaches to the term "personnel management."

Functional Character of Industrial Relations

Logically the term "industrial relations" includes all of the contacts between individuals that come about in the process of operating a business. From this standpoint it would include relations between members of the management group, between members of the clerical force or the supervisory force, or within the group commonly designated as labor, as much as it would the relationships across group lines. From another standpoint, industrial relations can be regarded as comprising the whole personnel of a business with emphasis on the relationships between the groups rather than within them. Still another viewpoint lays stress on the contacts between those who direct and those who are directed, whether the latter are employed in the office or in the works. Again, the phrase is sometimes used to include management and all the agents of management on the one side, and labor on the other, the term "labor" meaning, in general, industrial labor.

The present discussion will not be greatly concerned with fixing limits to industrial relations management. Topics that have practical significance in analyzing the task and getting it effectively done are relevant. No logical justification is urged either for inclusions or omissions. The paper will be occupied more with the foundations of policy than with technical organization. Emphasis will be laid on the mental attitude and equipment required in management, on the need for sound economic analysis as a basis of policy, on the importance of thorough-going education concerning the implications carried by whatever policy is followed, and on unity of policy and harmony of prac-

tice throughout the business. The last part of the paper considers the bearing of policy in respect to organized labor on the task of industrial relations management. No attempt is made systematically to cover a definite subject matter. Concrete situations are referred to not because of their relative importance but because they illustrate the main theme. The discussion aims to set forth an approach to industrial relations as a whole rather than to stress differences in viewpoint and detail.

Results obtained by giving expert analytical attention to industrial relations, whether directed to special phases of the task, like selection and placement, or to the subject as a whole, have amply demonstrated the necessity and the fruitfulness of such an approach. It will not do, however, to jump to the conclusion that the setting off of industrial relations is merely a new step in the process of dividing management into departments and subdepartments. In many cases a separate department may help to give men who come into a business as industrial relations specialists a fitting place in management councils. This, however, is a question of expediency, the answer to which may wisely be sought in its relation to local conditions and personalities rather than with regard to any governing principles.

When, however, we pass from tactics to the question of major strategy, industrial relations management is essentially functional rather than departmental. A department tends to become self-centered. Its business is to concentrate, and the thing on which it concentrates, in the absence of light from without, is likely to become the whole picture. But industrial relations management deals with a subject-matter which pervades all departments and crosses all department lines. Whether organized as a separate department or attached to central management, it must to succeed exercise an integrating, not a segregating, force on the business as a whole.

Management at the center has the task of knitting departments together and of keeping the business functioning as an organic whole. It determines the common ends towards which effort shall be directed and maintains essential comity between departments. Beyond that, departments are usually held for results, not for method or detail. But in dealing with the human factor in business, method and detail are of the very essence of the policy. Industrial relations policy and practice to be effective must reach into whatever divisions of the business they affect, with the full impulse of management behind them. Heads of departments and their subordinates are not hosts who confer the freedom of their domain upon the representatives of industrial relations; they are themselves the direct agents by whom policy is executed. It is their contacts with people, not the intermittent contacts of some outside agency, that determine results. Unless the whole departmental force absorbs the viewpoint from which industrial relations are handled, policy is diluted in execution, and practice becomes compromised with inconsistencies which jeopardize the whole structure.

The necessity that industrial relations policy and practice be all pervasive is easy to grasp, if only we keep in mind what business really is, and how largely it is made up of human contacts. Business—making a living—is for the great mass of mankind the major activity of life. Men spend most of their time working together in business making things for others and thereby making

a living for themselves. Industrial relations management is merely providing for special emphasis upon the people who are making things as distinguished from emphasis upon the things they are making. Looking at the matter in this way, functional organization of industrial relations becomes not so much a branch of management as a phase in the evolution of management as a whole.

Three Types of Directing Intelligence

Management is a growth, not a creation. During the process of evolution to the point of setting industrial relations apart for special attention, management has acquired in turn the imprint of three types of directing intelligence which may be called respectively the pioneer mind, the engineer mind, and the social mind. The force and vision of the pioneer, linked up with the science of the engineer, devised a business structure which marshals world supplies of goods and makes the life of men and nations more and more dependent upon their working together to common ends. It did not require a great war to demonstrate that human relations under our complex industrial system are carried on with increasing strain, but present turmoil in world affairs emphasizes this fact and makes the reduction of human strain stand out as the great problem with which a socially minded business intelligence now has to grapple.

By stressing what for want of a better term I have called the social mind in business, I do not imply that management can dispense with the kind of human equipment which has served it in the past. The vision of the pioneer and the engineer's trained power of scientific analysis are needed in dealing with the human factor in business as much as they were in surmounting material obstacles a generation ago.

We should not, however, retain along with these fundamental virtues equally fundamental faults nor accept a traditional business outlook which does not fit the present facts. In undertaking the reduction of human strain it is essential to proceed from the same careful analysis of social facts that the engineer has given to material facts and when this is done, the results of such analysis need to be welded together with analysis of the material facts into a constructive working plan. Whatever the men who draw the outlines of policy are called—economists, industrial engineers, personnel managers, or merely business men—they need a mental equipment which includes discipline in taking intelligent and discriminating account of the human conditions under which policy will have to be executed.

Basing Policy on Economic Analysis

Possibly the first step which a socially minded intelligence must take in the construction or adaptation of industrial relations policy is to compare present business conditions with our inherited assumptions about these conditions. Pioneer management proceeded from certain "axioms" among which the following were perhaps the most fundamental: inexhaustible resources; an unrestricted supply of cheap immigrant labor; government protection and encouragement with substantial immunity from public control; an elastic home market with a reasonably sure foreign market to absorb surplus. All this is changed. Some resources are exhausted; others are dwindling, and we are forced to turn attention from exploitation to conservation and wise use. Laissez faire in public policy is replaced by a welfare

concept that fixes the human level below which competition may not go. Labor organization has in some measure overcome the retarding influence of immigration and has made itself felt in respect to conditions for both organized and unorganized workers. Restriction of immigration is now shutting off the former comfortable supply of labor fed into the lower ranks. Finally, the aftermath of war has demoralized our foreign market.

It is not in the province of this paper to discuss how business in its various phases should respond to these changed conditions. In its new setting, management will probably have to avail itself of definite and accurate information concerning a much wider range of economic data than it has been accustomed to command in the past. It will probably need to lay foundations of success in more mature and many-sided judgments than the typical management has ordinarily made. And the penalty for waste, inefficiency, and needless human strain is likely to be severe.

Bearing of Fundamental Business Conditions on Labor Policy

If we analyze the changed business conditions to which reference was just made, the outstanding elements in the situation appear destined to work together toward putting the wage question in a somewhat different relationship to industrial relations policy as a whole than it has borne in the past. Restriction of immigration naturally intensifies competition for labor and makes for high standards of compensation. Organization in both its direct and indirect effects augments the force of competition. Cutting off foreign demand makes a high purchasing power at home a business necessity. Since the bulk of domestic consumers are laborers, good wages and steady employment are the chief means of developing the home market. If, as seems likely, cumulative influences of the sort here outlined continue to make for increased earnings and a rising standard of living, the elements entering into wage policy and the kind of facts required for trustworthy analysis of the problem will make heavy demands on the farsightedness of industrial relations management.

Naturally, the need for far-reaching analysis is not confined to industrial relations; nor are the particular facts whose cumulative influence was just noted the only ones which it is necessary to analyze in order to establish industrial relations policy on a sure foundation. They are taken rather as samples of the sort of thing with which the social mind in business must concern itself in the development of policy in general. It has become the task of management to command existing knowledge of political, social, and economic affairs wherever such knowledge has any bearing upon the success or the failure of a particular enterprise. Such things as the progress of the business cycle, the development and changes in markets, changes in the supply of raw materials, above all changes in money and credit are among the important economic facts which must necessarily be considered if policy is to be intelligent. Hardly less important are political conditions, local, national and international, and social movements or currents of thought anywhere in the world which affect the reactions of potential employees or customers.

The securing and interpreting of all these various kinds of knowledge is the function rather of a research department than of a department of industrial relations, since obviously the informa-

tion is to be used in all branches of business. Industrial relations management, however, has the duty to cooperate in research, especially in research pertaining to human affairs, and it has a further duty to help enlighten the central management as to the particular bearing conclusions reached may have upon the fixing of industrial relations policy.

If the results of study show that general economic and business conditions affect a fundamental question like wages in the way just outlined, what sort of advice should the well-equipped industrial relations manager give concerning the question? Wages obviously are linked up with production, efficiency, cost, competition, the nature of the demand for the particular product, and a variety of economic factors which are different for different industries.

In the men's clothing industry we have been talking about wages at frequent intervals during the past four years. The Chicago market became unionized in the spring of 1919 and was granted a substantial wage increase. A further increase of about 20% was awarded by arbitration in December of the same year. Since that time there have been an arbitration with no change of wage levels in 1920, a moderate decrease by arbitration in 1921, a further decrease by negotiation in 1922, and now arbitrators have just awarded an increase restoring what was taken away in 1922.

Since 1919 discussion of the question on the employer's side has been formulated by industrial relations men, most of whom were trained economists. Superficially, their first reaction to the wage question has appeared to vary but little from the attitude of the typical employer, but with each successive proceeding there has been a progressive tendency to place emphasis upon basic analysis as opposed to momentary bargaining power. Springing from such analysis, discussion has been more and more directed toward the relation of our costs to the purchasing power of the people employed in other industries on whom we depend for our market. Both sides are getting more light on the forces which promote or retard a profitable volume of production and employment and consequent adequate return to employer and employee alike.

Naturally, the conditions in other industries are not the same as ours, but from what we can learn of wage deliberations in general, they are more and more taking into account factors similar to those just outlined. Is it not becoming increasingly true that the things about which employers and employees differ, when wages are discussed, are questions of fact, which would greatly limit the area of conflict were it possible definitely to settle them?

It is not maintained that a fundamental question like wages has ceased or ever will cease to be in some measure contentious; nevertheless, to the extent that we are able to put both the employer and the employee in possession of accurate knowledge of the conditions on which wages depend, to that extent the non-contentious questions will tend to overbalance those which remain contentious. The question what sort of a fund can be created out of the prosperity of an industry as a basis for paying high wages, and under what conditions, is one which mere speculation can never answer. Only through scientific inquiry can an answer be approached. If some sort of machinery can be created in industry by which facts can be correctly analyzed, and the results of analysis made known to both sides, there will inevitably develop

a broader basis of mutual understanding among those who are informed, and this understanding will tend to create a fund of good-will which will help in bringing about reasonable compromise on issues that remain in conflict.

The place of economic analysis in industrial relations policy has been purposely stressed in the foregoing discussion. To the extent that analysis may reveal community of interest it is clearly the merest waste of energy to maintain a struggle in mutual ignorance, when knowledge would give a basis for mutual advantage in agreement. But the indirect effect of approaching fundamental questions on the basis of scientific analysis of facts may perhaps be even greater than the direct effect. If the fundamental reasons for the tendency of standards of living to rise become generally understood, it will naturally have the effect of giving wage earners a greater feeling of security and employers less anxiety when they see wages increasing.

Education and Adjustment within Management

Getting the right slant on basic economic facts and principles affecting labor is a necessary starting point for industrial relations policy; but it is only the starting point. It is one thing to be familiar with fundamental facts, and another thing to know what bearing they have on my wage levels compared with yours. It is even more difficult for the wage earner or his representative from his vantage point to arrive at the same conclusion concerning the rightness of a concrete wage situation or adjustment that I reach as an employer. The fact that fundamental conditions give a basis of confidence does not in itself guarantee good relations or justify leaving details to chance. The subject-matter with which industrial relations have to do and the sources of information and misinformation are so complex that in the typical large business definite educational effort and definite provision for contact and cooperation between management and workers are obvious necessities.

In nearly every large enterprise today there are at least four interests directly concerned with industrial relations: owners, management, minor executives, and labor. Within each of these groups there are usually sub-groups with cross-currents of interest and outlook. Sometimes the background to the viewpoint of an individual or group is historical, sometimes departmental, sometimes personal. There are also in the typical business numerous forces impeding the success of industrial relations policy, which have their background merely in ignorance, prejudice, or a mistaken notion of the real interests of the persons concerned. Business procedure, like other great facts in life, is largely governed by tradition, prejudice, and habit and can only with great tact and foresight be brought under a rule of reason based on careful analysis of concrete facts.

The first step in overcoming the inertia of prejudice and tradition is the education of managers and owners. Ownership controls management, and the two by definition are responsible for industrial relations, since managers and owners exercise both initiative and veto in respect to policy and procedure. The slant from which management approaches the subject determines the atmosphere in which industrial relations are handled; the ideas and impulses of the various groups within management form the background upon which industrial relations practice de-

velops. Not until policy and procedure have been accepted and assimilated by management so that they dominate thought is there a sure foundation for dealing with minor executives and labor.

Due to the complexity of its task, it is necessary for management in most cases to base its action on composite judgments. While the president or general manager must still know his business, no man who comes into a large going concern as manager today can hope in the old manner to know and control detail from top to bottom. Successful management requires the focusing of specially equipped minds on the diverse elements of policy and administration. The data required for action and for checking results must be furnished by specialists, and specialists must be depended upon for successful execution of decisions.

In every business there are basic functions like sales, production, and finance administered by specialists who are at the same time advisers on general policy. Other functions, like office management and accounting, are frequently attached directly to central management with the person in charge acting as a general adviser. Finally, a concern often has general advisers, like attorneys and engineers, who participate in management decisions.

The group of persons who help in making important decisions are usually known as the staff organization. But those members of the group who are at the heads of particular departments are at the same time under the general manager, in charge of what is known as the line organization. The staff is responsible for policy and for coordination in its execution. The line is an agency for transmitting orders, administering detail, maintaining discipline, and getting work done. In large, well-managed concerns there are not only lines of authority but cross-lines of information and conference. However the boundaries of departmental organization are drawn, once drawn there springs up within departments a departmental viewpoint that tends to obscure the viewpoint of the business as a whole.

Effective Industrial Relations Management Requires Unity of Management Policy and Practice

When a departmental view is advanced with force enough to bias management decisions, the strength of its influence is sometimes due to the relative importance of the particular department and sometimes to a strong personality. One of the first steps in unifying industrial relations procedure is to locate the centers of special influence. Getting the special interests in a business squarely behind general policy without creating new strains requires a high order of statesmanship. Because the person directly charged with industrial relations must deal with influential persons in different departments from the standpoint of management policy as a whole, he should himself be absolved from all implication of departmental bias; consequently, there is always a presumption that he should occupy exclusively a staff position.

Among the special interests in a business the sales department is often the most difficult to accommodate to industrial relations policy. The reason is obvious; the prosperity of a normal competitive business is likely to center in sales. Without sales there would be no business, while a sufficiently successful sales department produces profits within limits in spite of burdens else-

where. For this reason it frequently happens that the sales department can override the viewpoint of all other departments.

The clothing business has been built up through intense salesmanship. The relation between designing and selling is necessarily close. Sales activity in the old days tended to flow from the designer's office, and whatever the designer and sales manager demanded it was the business of the production department to turn out. Desire to make the public buy was supposed to be the designer's motive in creating new models, but it was never quite certain where this motive left off and his temperament or whim as designer began. This question was not very important, provided the prices at which goods could be sold were sufficient to cover the cost of variation in design. But the upward swing of labor cost has raised new issues.

Piece rates, fixed for standard models, are given differentials when these models are varied. Theoretical costs calculated on the basis of a certain variety and balance in models sold may be far below actual costs if varieties are increased or new differentials added for making changes in existing models. Designers and salesmen, being unfamiliar with the operation of industrial relations, tend to charge high cost to the exactions of labor and are inclined to regard such exactions as unreasonable. A scientific study of sales in relation to variation in design is likely to reveal a considerable amount of no-profit designing which should either be abandoned or charged to research. When such analysis is carried out, it brings designing into some balanced relation to labor and labor cost. With the coming of functional labor management in the clothing industry the designer has ceased to be the czar of production, and his functions have gradually come under control through no compulsion except the compulsion of business facts.

Another way in which industrial relations management effects an integration of policy has to do with discipline. The theory that the question of models should be decided by the designer without recourse had as its corollary the assumption that the production department willy-nilly should turn out the goods designed and turn them out on schedule. Trouble in the shop under these circumstances was calculated to upset the whole chain of events, consequently every effort was made to avoid trouble. The pressure on the production manager to get merchandise out on time tends to breed timidity and unwise concessions when there is a rush, with a reaction possibly of undue severity when the rush is over.

Industrial relations management cannot proceed in this way. Unless discipline and responsibility for work are maintained in harmony either with principles of right and justice, or with some accepted rules of procedure, the whole purpose and results of industrial relations management are undermined. In these circumstances, it has become necessary either to take all power to make adjustments out of the hands of the production department or else to introduce a system of reporting in which responsibility for unwise concessions is made to stand out in the open where it can be properly appraised.

Next to unity of policy, perhaps the most important essential to sound industrial relations practice is definiteness and dependability of procedure. This does not mean that paper rules and regulations should replace personality and human contact. But just because of the human element in the problem it is essential to have something definite upon

which both the employees and the supervisory force may depend and to have standards of action to which they may be held responsible. The kind of procedure to be established obviously will depend upon the nature, history, and traditions of the business and upon the type of employees and the environment in which they live and work. It will depend perhaps even more upon the fundamental policy under which industrial relations are being handled.

Up to this point in the discussion certain fundamentals have been stressed—the necessity of resting policy on analysis of basic conditions; the need for unity of policy among different groups in management; the requirement that parties in interest, and above all management itself, be educated in the meaning and implications of policy; and lastly, the importance of definite procedure. The author believes that all of these requirements are fundamental, irrespective of the particular labor policy followed. When, however, we pass from these fundamentals to concrete administrative measures, procedure naturally varies to fit policy.

Industrial Relations Management in Open Shop Concerns

The most far-reaching differences in policy arise out of the attitude taken toward organized labor. Concerns striving for constructive industrial relations management may be roughly grouped into three classes in reference to their policy toward unions: (1) those which have no official relations with unions and which, because they intend to give their workers conditions as good or better than these workers could hope to secure forcibly through organization, do not expect to be forced into such relations; (2) those which do not deal with unions but which are trying to deal constructively with their own employees without discrimination and without taking a definite position concerning future relationships; (3) those which from necessity or choice are dealing officially with a union and are trying to develop policy and practice which will make for progress and efficiency in this relationship. Since group 2 may be following the lead of group 1 today and of group 3 tomorrow it will not be separately discussed.

In the nature of the case the concern which is trying to develop industrial relations policy in such a way as to avoid unionization must not only be on the alert to meet the reasonable needs of workers, but, if possible, it must anticipate them and always try to keep at least one step ahead of the procession. In general, this will mean systematic provision for giving workers opportunity to voice their thoughts freely. It will also mean giving workers' views at least such force as open-minded scrutiny in council shows them to merit. It goes without saying that to perform such a task special organization and special knowledge are required and that measures adopted to satisfy the aspirations of workers must come to them from a source and in a form calculated to call forth favorable response. It is the task of industrial relations management to initiate, preferably in cooperation with employees, such organization as the maintenance of essential contacts may require. Members of the supervisory force in each department have an essential part in all cooperative activity and the atmosphere surrounding their contacts will largely influence results.

There is a large literature concerning the equipment or lack of equipment of foremen and superintendents to deal with human relations. If they lack

such ability within the field of their responsibilities it means that there has been neglect in selection or in training, and it devolves upon industrial relations management to see that the deficiency is made good. In any case, it is becoming more and more clear that if a business concern is to secure and maintain the confidence of its employees, such confidence must come primarily through the contacts of those minor executives who have dealings with the employees in the normal course of business. Whatever direct contacts industrial relations management maintains with workers either through their representatives or through conferences and assemblies must be supplementary to and not in the place of wholesome and constructive relationships between employees and the supervisory force.

Shop councils, employee representation, company unions—some definite organization within a plant for joint consultation or joint decision is probably the only constructive way for a large concern to forestall dealing with a national union. The guiding of policy and the working out of practice in this field is perhaps the most responsible and significant work that industrial relations management has to perform. Absence of union discrimination and absence of either formal fixed limits or ill-considered promises concerning the scope and powers of representative bodies are coming to be regarded as basic principles to which policy should conform. Plans of representation which are a natural evolution from wholesome relations in the past rest on a surer foundation than those created in a hurry to meet an emergency.

Whatever the circumstances under which a plan of representation is adopted, it must have sincerity and courage back of it and management must be prepared to deal with the kind of representatives the workers choose even though from its standpoint they may not be the most representative. Representative machinery works best when its functions develop around normal human contacts without constraint or artificiality and in a setting and atmosphere of confidence.

Industrial Relations Management under Union Agreement

Industrial relations under agreement with a national union proceed from a viewpoint which is quite different from that just set forth. Unions which are strong enough to bring about definite agreements with management are usually aggressive and they naturally take the initiative in forcing their views upon management. There is, therefore, little occasion for an industrial relations manager under a union agreement to anticipate the requirements of employees. He must rather occupy himself with restraining the zeal of union representatives and keeping demands within limits.

This does not mean, however, that the opportunity for constructive work is less than it is under a plan of employee representation. Safeguarding the legitimate rights of management under a union agreement is a task which in the long run serves both the business and its employees. Helping management to adapt itself to the conditions of an agreement frequently results in greatly increased efficiency. Guiding management in the fulfilling of its responsibilities and in securing its rights under an agreement is a task which calls for constant study and mature judgment. Making action await proper investigation and thus developing in both management and the union respect for calm,

orderly procedure is perhaps one of the most important tasks that industrial relations management can perform. Working out such an approach to problems that agreement, where agreement is possible, can be reached without unnecessary commotion and friction is another important task for wise industrial relations management.

Correctness in procedure and detail under a union agreement is fully as important as it is in the case of employee representation. In the Chicago clothing market, where labor management has had notable development, there has gradually been worked out in connection with adjustment machinery a technic which during the four years in which the machinery has been operating has considerably reduced the field of conflict and accelerated the process of adjustment. Skill in handling issues has made it possible to adjust practice to the requirements of management better than was anticipated at the time the industry became unionized.

Common Aims of All Industrial Relations Policy

The question is frequently raised whether from the standpoint of ultimate industrial relations control there is an inevitable conflict between the principles of employee representation and union recognition. If the economic foundation of the labor question in America is what analysis earlier in this paper made it appear, it is not unlikely that competition and the danger of unionism will lead concerns with employee representation to work out in cooperation with their employees a situation which may be fully as favorable to the workers as could be demanded by union representatives. At the same time, it seems likely that the danger of overburdening a particular industry by excessive demands will keep union concerns fairly close to the procession and develop a moderation of approach which will considerably narrow any possible zone of difference between the status of union and non-union workers. If, on the other hand, there should be a fundamental change in economic conditions with sharp competition for jobs for a considerable period of time, both forms of organization are likely to be subjected to tests perhaps more severe than any which have been contemplated. Should such a condition arise, it is idle to predict what form of workers' organization would best stand the strain.

An atmosphere of mutual respect and confidence, a habit of making action await facts, recognizing the necessity of mutual accommodation in the interests of employer and worker alike; —these are constructive ends which industrial relations management can help to advance in both union and non-union industry. In the present state of knowledge and experience there is little profit from the standpoint of either science or industrial efficiency in trying to evaluate the relative excellence of one or the other approach to the industrial relations problem. Any well-considered effort to deal with an actual situation, whether union or non-union, in such a way as to increase efficiency and mutual good-will is worthy of encouragement.

There is, of course, a vast amount of highly important detail connected with industrial relations management, but most of it needs to be interpreted in reference to the particular setting in which it is applied. That vigilance, wisdom, and good judgment in detail procedure are of the essence of sound practice is as fundamental as any principle of industrial relations manage-

ment. The principle, however, is not confined to industrial relations, and its acceptance does not carry any necessary implication concerning procedure in a concrete situation. Industries and concerns that are approaching industrial relations in a systematic way are accumulating an effective technic for handling important details; to go further into that subject is impossible here.

The foregoing discussion has proceeded from the view that industrial relations management is a function of management in its entirety and not a segregated task. While it requires special training and equipment on the part of those who are given direct responsibility for administrative detail, it requires even more a kind of intelligence in management as a whole which can analyze the human forces in industry and make such analysis rather than impulse or tradition the basis of policy and practice.

THE ROLE OF ECONOMIC PROFITS IN THE RETURN ON INVESTMENTS[1]

By ARTHUR STONE DEWING

SINCE the days of Adam Smith, and even before, the importance of human judgment or foresight has been recognized as a necessary element in all economic production, but this acknowledgment has always been with reservations. So interested has a certain type of economist been in a theory of rent and another type in a theory of wages that anything like a consistent explanation or broad understanding of the importance of business foresight to industry has been overlooked. That the natural resources of the earth, the labor of man and the tools of industry must somehow be coordinated is tacitly acknowledged as also is the simple fact that the risks inherent in industry, from the raw materials of production to the ultimate distribution of the finished goods must be carried by someone. But a recognition of the comprehensive character of this supervising and risk-carrying necessity has been only grudgingly acknowledged. Consequently the theory of business profits, confronting squarely the facts of an actual business world, has been and still is the weakest strand in the philosophy of neo-classical economic theory.

There must be foresight, guidance, or control in every business enterprise; someone must buy raw materials and pay labor its daily or its weekly wage, whether the goods manufactured sell for more or less than the expenditures involved in their cost. The business manager is no less significant than the laborer and his wages or the capitalist and his interest; and the business must yield a sufficient profit to reward the manager for his planning and the risks he takes in paying his various contractual obligations before his goods are sold. Someone has to manage business of every description, and with that management go, of necessity and by reason of the responsibilities of management, the risks of loss or gain. This is why the economist, fully conscious of the vicissitudes of the business world, speaks of positive business profits and negative business profits—the former, the reward for successful management and risks wisely taken with perspicuity; the latter, the losses of stupid management and risks foolishly taken without adequate knowledge or insight. The positive-profit manager safeguards the labor and the capital entrusted to his care, as well as makes a profit for himself, whereas the negative-profit manager dissipates the capital under his control and soon reverts to the ranks of labor or becomes an economic parasite.

The application of this simple theory of business profits to all forms of economic enterprise is now so thoroughly recognized that, in spite of the apparent failure of classical economic theory to recognize the full significance of the rôle of the business manager, its elaboration at the present juncture is

[1] This is the second of a series of three articles on the theory of investment. The third article will treat of the bearing of the industrial cycle on investments.—*Editor.*

not necessary for the main purpose of this study. This main purpose is to show that the general theory of business profits is applicable to investment; and further that the investment of funds is a real business, subject to the rewards of true business foresight and the losses incident to attempts on the part of the poor business manager to invest funds. This is not self-evident. The school teacher, clergyman, lawyer, dry goods merchant, and shoe manufacturer know enough about their own respective businesses to feel assured that the ordinary uninitiated could not succeed without long and specialized training. Yet these same men stand ready to embark on one of the most intricate of businesses—that of investment—requiring perhaps the most extensive and far-reaching specialized knowledge of any profession or business. To compare intelligently, and with a degree of insight which makes the comparison something more than a guess, the credit obligations of Sao Paulo and the mortgage bonds of the Chicago and Northwestern Railroad, the debentures of the Detroit Edison Company and the common stock of the General Electric Company requires acumen and a breadth of knowledge compared with which the ordinary professional and business judgments are child's play. And yet it is just such specialized knowledge and acumen which constitutes the business of investment, a business which many, without training or aptitude, feel qualified to embark upon with their own savings and those of their relatives and friends.

The significance of business profits, in the somewhat technical sense in which the expression is used here, has been suggested in a previous study.[2] At that time it was pointed out that the return on any investment, sound or speculative, paying little or much, consisted of three essentially different elements. There is a certain component part represented by the pure interest, the riskless price of capital. This is much the same in all civilized countries at any one time, varying within narrow limits from about 3% to 5%. There is also an amount represented by the current market's estimate of the risk of loss involved in the particular investment, an insurance premium to compensate for the possible loss of principal or interest. This varies according to the nature of the investment, from an almost negligibly small fraction of 1% in high-grade government and municipal bonds to 10% or 20% and more in speculative mining shares. And there is, finally, a certain increment or profit which accrues to the investor who acquires an investment carrying with it a higher premium than the actual or mathematical value of the particular risk requires. This third element represents the reward of business or managerial skill in the selection of an investment whose intrinsic merit is greater than the market estimate; or, to phrase it differently, the real risk is less than what the market price gages it to be. This reward may be negative. It is negative in those investments in which the compensation for risk is less than the inherent risks—low interest-bearing bonds sold on the past reputation of the issuing corporation or municipal bonds selected solely because of their tax-exempt feature. Whether positive or negative it constitutes a true business profit, analogous in all respects to the business profit belonging essentially to any economic activity.[3]

An example will make this analysis

[2] HARVARD BUSINESS REVIEW, Volume 1, No. 3, page 300.

[3] The analysis of the income yield described in this paragraph has been illustrated by the following

clear. A bond due many years hence is, at the moment, selling so as to net the investor 5.37%. Let us assume that the pure interest rate is approximately 4.5%—that is, capital would lend without risk and without any adjustments for taxes, at 4½%. Furthermore, let us assume that the chance or probability that this particular bond will become valueless during the next year is one chance in two hundred. The investor will require, therefore, an insurance premium of one-half of 1%. Under these conditions he will be entitled to receive exactly 5% return on his investment—4½% for pure interest and one-half of 1% for risk premium. In reality, however, he receives more than this, namely, 5.37%; so that he gets a small amount of income which, were all investment made with omniscience and a perfect knowledge of present and future conditions, he would not be entitled to, nor would the economic order of society permit him to have it. But no investor is endowed with any such perfect knowledge. He is always and incessantly making judgments of the relative risk involved in different investments; the very act of decision in making an investment involves this kind of judgment. And the only test of the accuracy of these judgments is the outcome—the actual experience of the investor. In the illustration just cited he has chosen an investment which should, in terms of its absolute risk, yield him only 5%, yet because of ignorance on the part of the rank and file of investors and the widespread failure to appreciate the fundamental soundness of this particular investment, its market price is such that the yield is 5.37%. He exercised real business skill in purchasing this particular investment in preference to others, and the increment or profit of .37% is a true business profit accruing to him because of his skill and discriminating foresight in picking an investment which carried with it a margin above pure interest in excess of its absolute risk.

There is also the possibility of negative business profits. At the same time that the bond described in the foregoing paragraph was selling on a 5.37% basis, another bond was selling on a 4.78% basis. Now it happened that this latter was known to all bankers and possible investors; the corporation of which it was an obligation had had a superior credit standing for many years. It was a "legal investment" for New York and New England savings banks; it was readily salable on several exchanges; yet on careful analysis of all the factors that determine bond security it is quite evident, we will assume, that the chance of loss of principal was, as in the foregoing case, one in two hundred for the ensuing year. That being the case, the yield should have been, again as in the foregoing case, 5%. But the investor who selected this

Footnote 3 continued from page 452:
formula:

$g = p + r \pm e.$

when "g" represents the gross return on any investment, "p" the pure interest rate then prevailing, "r" the compensation for risk, and "e" the profit (+) or loss (—) due to individual business judgment. The "r" would always be positive in the case of bonds or fixed income investments, because there is never a "chance" or condition whereby the investor might anticipate an increased return. On the other hand, in the purchase of common stocks, the chance of loss of principal and income, + r, is always balanced off by the possibility, at least, of gain of principal and income, — r. Under normal circumstances, the chance of loss will, in the investor's mind exceed the chance of gain so the resultant of (+ r) and (— r) would be positive. On the other hand, it often happens that the expectation of sudden increased yield, or stock dividends or other melon-cutting activities so affects the investor's estimate of the future yield of the stock that the chance of increase (— r) so far exceeds the inherent risk that the resultant of the two becomes negative. In such a case — r should obviously be substituted for + r in the above formula.

bond, instead of obtaining a positive business profit would endure a loss of .22%, the difference between the 5% return to which pure interest and the absolute value of the risk would entitle him and 4.78%, the actual yield at the prevailing market price. This would represent a true loss—negative business profits—the penalty for failure to use discrimination and foresight and business acumen in picking his investment.

In the light of this analysis the problem of investment, considered as a business, narrows itself down to the selection of those investments which carry positive business profits. In other words, investment is a business like any other economic activity. Like a corner grocery store or a steel mill, it is subject to good and to bad management. If a fund is invested with skill—like the grocery or the mill—a true business profit will result, which, if not drawn out, will represent regular accretions to the fund, just as the profits of any business undertaking, not drawn out, add to its capital. And if the fund is invested with poor or negative business ability, there will be a steady diminution of the fund, just as a grocery store or mill, badly managed, may continue to exist by constantly eating into its own capital.

Aside from forecasting the fluctuations in pure interest rates, which affect simultaneously the yield on all investments, probably by an approximately uniform variant, the business of investment is the selection of those individual investments carrying positive business profits. Described thus briefly this analysis provides us with a clear-cut definition of a good investment. This expression, as used ordinarily, is synonymous with sound investment. A good investment is said to be one with only a slight chance of loss of principal —a state or municipal bond, a closed first-mortgage railroad bond eligible for Massachusetts savings banks. Yet if the analysis in this discussion is correct, a good investment should mean something quite different. It should mean an investment entailing a positive business profit. Of the thousands and tens of thousands of possible investments open at any one time, some are selling to yield more than pure interest and the absolute value of this risk—like the bond selling on a 5.37% basis cited in an earlier paragraph. The purchase of such a bond yields a positive business profit. It is, therefore, a good investment. In the long run the continued selection of such investments—when there is a positive business profit, whether the money yield is 5%, 6%, 10%, or 20%—will yield to the beneficiary a return greater than pure interest, after adjustments for losses. And this analysis may apply to the high interest-paying mining stocks as well as to low yield bonds of high repute. For example, the stock of a certain Canadian silver mine may be purchased at a price to yield the investor 26%. Although the silver is being rapidly removed and the reserves are relatively low, such an investment may be good in the sense used here. If pure interest is estimated at 4.5%, the aggregate risk premium and the profit or loss is 21.5%. In other words, an investor in such a security assumes that there is approximately one chance in five that the investment will be a total loss during the year; or to phrase it differently, that the investment will become a total loss in a little less than five years. If experience shows that the stock continues to pay its dividends beyond five years, everything received thereafter will be a real business profit. If it becomes a loss in 10 years, then the real

risk premium should have been 10% instead of 21.5%, and the difference each year between 14.5%, pure interest and the absolute risk premium, and 26%, the yield actually received, or 11.5%, is a true positive business profit. In such a case the mining stock is a very good investment.

Conversely, a bad investment is not necessarily a speculative or risky one; it is merely one in which the investor obtains a negative business profit. An example is a municipal bond which yields only 4.15%. There is some slight risk—municipal bonds have "gone bad" in the past and will in the future—but owing to the tax-exempt features and that glamour of respectability about a municipal bond, the demand exceeds the supply, and the investor does not get even pure interest, much less any compensation for risk. Even though the risk is regarded as zero, which is not true, the investor gets a negative business profit. Under any form of analysis it is a poor investment.

If this analysis is true, the terms good and bad applied to investments do not connote the relative soundness or riskiness. A good investment may have a slight risk or a great risk; a bad investment may likewise entail little risk or much risk. It is merely a question of whether the yield is greater or less than an adequate premium over and above pure interest. It is a question of actual experience deducible from large averages.

The terms good and bad, however, as used in this connection do not imply that all good investments are appropriate under all circumstances. Investment is an art as well as a science, and the selection of the proper and appropriate kind of investment suitable for different persons of different temperaments, different economic circumstances and different intellectual and moral backgrounds is a part of what one might call the art of investment in contradistinction to the science of investment. No one with the least human perspective would countenance the placing of the insurance money of the proverbial widow in the shares of a well-managed mining corporation, even though the principles heretofore described entitled it to be called a good, even very good, investment.[4]

The application of this theory is dependent obviously on the control over funds of sufficient size such that individual losses may be compensated for by the aggregate premium reserves. This requires a considerable distribution among different industries and different issues of securities because the individual units of investment, such as

[4] In all small funds the marginal utility of the principal to the individual investor is the dominating consideration. To the widow with a life insurance of $2,000 as her only reserve the value of each dollar of her meagre fund of capital is to her so great that even the small possibility of loss, as weighed against the large possibility of gain, would or should deter the widow from taking the chance. Especially is this true when the fund represents the total savings of an aged dependent. Under such circumstances the marginal utility of each single investment—necessarily proportionately large because the units in the distribution are a hundred or a thousand dollars—is exceedingly great to the dependent. This simple judgment is based on a consideration of the value to her of each unit of her capital rather than on the objective principle of the intelligent application of the law of averages. Just as life insurance—the premium of which is always weighted by at least the loading in favor of the company and against the policyholder—may be a very wise and expedient expenditure to the thriftless young husband, even though life insurance can never under any circumstances be considered as a good investment when considered in light of mathematical averages. All that is said in this study does not in the least minimize the importance of the human aspects of investment as an art with a human background and its application to the varying conditions of human life. This note is inserted so that the theory defined here shall not be applied too literally, and without regard to individual cases.

thousand-dollar bonds and hundred-dollar shares of stock, are of considerable size. Thus, for example, it is estimated that the absolute probability of loss of a certain type of investment is one in one hundred per year. Each member of the group would therefore carry a premium of 1% over and above pure interest. But if the fund included only 50 single unit investments, and the loss happened to fall within this group of 50, then the aggregate of all the risk premiums of the group would compensate for only a half of the losses. On the other hand if, instead of carrying 50 such units, the fund included 500 units, each a tenth of the size, the losses to the group would approximate five units and the aggregate risk premiums would quite nearly if not fully compensate for the losses. This is the economic justification for investment distribution. It is a practical means, the only practical means in the United States, for creating something approximating a balance between the certain losses and the aggregate of risk premiums. Some such balance has to be created before the profits or the losses due to the exercise of business ability show themselves. It is the same old story, long exemplified in all kinds of insurance, that the totality of chances must be of sufficient size so that the so-called law of averages, the strict mathematics of probability, takes the place of mere chance.

This is all the value there is to the principle of distribution which is often heralded as the fundamental principle of all sound investments. The Englishman who thinks he has safety and general excellence of investment by placing a portion of his fund in the shares of an Argentine railroad of which he knows nothing, part in the bonds of an Australian traction recommended by a broker clerk, part in the debentures of an American industrial known to him only by name would probably do better to put the entire fund in a British security of which he knows at least something. I fail to see how a fund placed in 10 poor securities is any better or any safer than if placed in a single poor investment.[5]

The specific purpose of this discussion, however, is the further analysis of investment business ability—the "e" in the little formula we have used above. This consists in placing capital in the industries where it is most needed —a fact evidenced by the largeness of return of the invested capital as a whole in proportion to safety—and in the securities of those industries where the market price overestimates the risk. Specific conclusions of fact in these questions would obviously involve a treatise on the theory of investment, not even an introduction to which—a prologomena, the Germans would say —is within the scope of this article. Yet there are certain observations, illustrations as it were, which may indicate certain lines of discrimination among investments.

Before there is selection among se-

[5] It is distinctly unfortunate that American financial practice has not imitated at least the form of the English investment trust or corporation. Through the instrumentality of these investment agencies the small investor is able to obtain the two important things almost always lacking in the administration of a small fund. He has the detailed attention of a man or men who make investment a business, a main intellectual and economic interest. He also obtains adequate distribution of risks no matter how small the principal of his fund may be. The nearest approach is the New England savings bank, but, unfortunately, officers of savings banks are chosen more for their respectability, family connections and age than for either business ability or knowledge of investments. Savings bank investments are also determined by arbitrary state laws, representing, for the most part, the vague and uncritical investment sentiment of the preceding generation. See note below p. 459.

curities there must be selection among industries. The investor should place his capital in an industry which shows the vitality of continued or increasing economic profitableness based on social usefulness; he should eschew those industries which have apparently outgrown their serviceability. Capital waiting for investment is mobile. It flows where the attraction is strongest, and the attraction is measured by a public demand for the product of the industry that is constantly requiring an increased supply; and, contrariwise, capital is repelled away from an industry in which the supply of its product exceeds the public demand at a remunerative price. Obviously, the adjustments of fundamental industries to the shifts in public demand occur slowly and with much grinding and wrenching of the cogs. Nevertheless, the investor can anticipate or at least work in agreement with these adjustments by control over capital. It is a fundamental dictum of economics, which business men and social theorists are apt to forget, that the cost of the production of a commodity does not at any one time determine its market price.[6] True, in the long run the prevailing market price either retards or stimulates the production of goods, according as it is below or above the cost of production. But in the short run, at a given time, the price a manufacturer can get for goods, or a utility for its service, is determined solely by the demand and the supply of the goods or the service. Accordingly, if the demand for goods or service remains such that the market price is consistently above the cost of production, capital invested in the industry will receive a liberal return. If it is consistently below the cost, capital will be insufficiently paid and the capital already unalterably fixed in the industry will depreciate in value. The course of industries, like the course of empires, is determined by social and economic motives.

All this means just one thing. The investor must pick the industries which produce goods or services so much demanded by the contemporary social order that the market price of them remains consistently above the cost of production. For example, he should pick the manufacture of electrical equipment rather than the quarrying of granite, the service of electric power rather than the service of electric[7] rail-

[6] Barring monopolies where the cost, if known, is an impregnable barrier beneath which the price of the commodity cannot fall, and publicly regulated industries where a government fiat garbles the decisive, albeit changing, working of economic laws.

[7] A casual observation would indicate that capital invested in the electric street-railway industry any time during the last quarter century would have represented a bad investment in the sense in which the expression is used here and in the ordinary acceptance of the term. Two graduating students of the Harvard Business School, W. H. Boireau and E. H. Crabbe, in a statistical thesis covering several general types of industries compared the investment results of a large group, altogether 340, of common and preferred stocks chosen among dividend-paying securities. The list was a random selection of dividend-paying stocks, as of January 1, 1900, and they traced this group, by exhaustive computation of dividend yields and market values, down to January 1, 1923. Although the many reorganizations in the street-railway industry interfered considerably with the "smoothness" of the statistics in this particular part of the investigation, nevertheless this part of the conclusion is significant. The investment in no one great industry was "the best investment for all the periods (from 1900 to 1923)—street-railway stocks were the worst investment for every period. Since, as suggested in the discussion of the compilation of the street-railway lists, the stocks used in these lists were better than the average street-railway stock, it may be concluded that an investment in any other of the groups analyzed would have been on the average more profitable than an investment in street-railway stocks." This conclusion, from the statistics of investment, is borne out by the statistics of earnings of public utility industries represented by the Special Census of 1917.

way transportation. This is not a discussion of the eternal verities of economic value, nor of the ethical or social values of different kinds of commodities—of the movie or malting industry in contrast to the textbook or packing industry. It is merely a question of social demand in its crudeness and blindness.

A similar principle may be applied to corporations within an industry, but among corporations the rough outlines of a life cycle are more clearly discernible. Thirty-odd years ago the geologists, studying the geographical forms of the earth's crusts, evolved the idea of the geographical life cycle. This was a succession of stages from youth maturing through old age to final decay through which all land forms passed. The analogy between human life and the stages in the history of industries and individual corporations is just as close and illuminating as this analogy to the earth's forms, and the student of a science of investment might well adopt this nomenclature of the geologist. Industries and corporations have their birth and youth. They suffer from the crudities and struggles incident to rapid growth and economic adjustment. Capital is difficult to obtain from the outside, but what is invested in a youthful industry or youthful corporation—through confidence in the future rather than results of the past—yields large returns. But such an investment to be more than a mere gamble must be made with a broad knowledge of the risks involved and a prophetic knowledge of economic values. Such investments are never recommended by the trustee-lawyer or the country banker. Following the period of youth, industries and corporations have their stage or epoch of maturity. They become acknowledged. They compete on a reasonable basis with other established industries and established corporations for banking credit and investment funds. Consequently the returns on capital invested in such industries or such corporations yield a fair rate of interest with a reasonable, though not excessive compensation for risk. Were it possible to forecast the length of time, which varies greatly, that an industry or corporation will remain in this maturity stage, investment of capital here would be sound and relatively permanent, neither increasing nor decreasing so long as the industry or corporation remained in this "balanced" condition. And then finally there is the old-age stage. The industry, and particularly the corporation, lives on, buoyed up for a considerable time by its past accomplishments. If we are considering a corporation in the old-age stage, it will show large capital assets, large bookkeeping surplus, but relatively low current earnings. Nevertheless, its stock will be eagerly bought by the lawyer-trustee because of its long dividend record. Those who by training and cast of mind are wont to forecast the future entirely by the weight of accumulated precedent will regard the old-age industry or corporation, even on the brink of final dissolution, as thoroughly sound, eminently "conservative." At the final break of the New Haven bubble, its stock was held by upwards of 7,000 trustees, a large proportion of them lawyers, extremely conservative in their investment ideas.

Again, it may be observed that it is not within the purposes of this article to discuss specific problems of investment as applied to classes of investments or individual investment securities. Yet entirely by way of illustration it is possible to show the rough application of the principle here enumerated to classes

of securities as well as types of industries.

As an illustration, we may consider the influence of wide knowledge concerning securities upon business judgment in the selection of investments. It is obvious as a very simple initial premise that wide knowledge concerning a security tends to increase the number of possible investors who can or think they can appraise its true value. From this it would appear to follow that the yield, at market price, of a widely known security more nearly approximates its absolute value—pure interest plus true compensation for risk—than that of a less well-known security. In other words, the opportunities for the exercise of marked business ability in the selection of investments are less in widely known than in little-known securities. Further, it might seem to follow that the probable error in the estimates of the risk of a widely known security would be quite as apt to be positive as negative. That is, the zone of error in the estimation of risk among widely known securities besides being narrow would be quite as wide above as below the line; or to phrase it differently, the average investor would overestimate quite as much as he would underestimate the absolute value of the risk of a widely known security. This, however, is not true. The human mind welcomes the familiar. It is prejudiced in favor of that which it knows about and against that of which it is ignorant. And the intensity of its favoritism for the familiar varies with the extent of familiarity. Consequently the investor will be more apt to underestimate the risks inherent in familiar securities, or securities posted or advertised by some artificial or general means of stamping familiarity upon them. The best example of such an artificially posted group of securities made widely familiar by such a means is the list of legal investments for savings banks. Added to this prejudice in favor of the familiar, as compared with the unfamiliar security, is the operation of the old law of demand and supply. Savings bank and other "high-grade" securities are in the limited supply, but the demand covers a wide range, especially from the savings banks themselves which are forced to confine their security purchases to this group. Whatever else may be said concerning general investment values of different groups of securities, I am convinced that no group as a whole commands a market price which so consistently underestimates the inherent risks. Or from the practical point of view of the exercise of business judgment, there is no group which, as a whole, affords so consistently poor investments as the so-called "legals" for New York and New England savings banks.[8]

[8] I have asked students, at various times, to compare statistically savings bank "legals" with other classes of securities. The difficulty is always to establish a sound basis of comparison which shall be from every angle fair to all the classes considered. Several years ago a student made a comparison of changes in principal value of 10 carefully selected (a) municipal, (b) savings bank "legal" railway, (c) "medium" non-legal railway, (d) poor railway, (e) industrial bonds from 1903 to 1913. He found that the greatest aggregate loss was in municipal and the greatest gain of principal in industrial bonds. This study was not exhaustive and the results were not of comparative value.

This present year certain graduating students of the Harvard Graduate School of Business Administration have approached the problem from different angles, each undertaking an elaborate statistical study. Three of these studies call for special comment.

F. W. Mansfield, Jr., sought to determine the relative investment merit of three groups—(a) bonds legal for Massachusetts savings banks, (b) high- or medium-grade bonds not eligible for savings banks investment, and (c) speculative bonds. He assumed that on January 1, 1901, the sum of $100,000 was invested in a random but nevertheless widely distributed group of 50 bonds of each

The conclusion might possibly be drawn from the foregoing reasoning, and the statistical studies cited, that investments with a considerable risk premium were under all circumstances to be preferred to well-known, "sound" securities having a low yield. This is not so. Throughout this study we have been considering investment as a business or a science to be conducted with

Footnote 8 continued from page 459:
of the three classes. During the intervening 22 years the interest receipts were added to each fund, the losses through failure and reorganization subtracted, and the bonds sold January 1, 1923. Bond prices were on this date relatively high as compared with the preceding few years, but the speculative bonds were still feeling the effect of the depression. Nevertheless the savings bank bonds only accumulated a fund of $195,000. There was only one case of defaulted interest and this default was subsequently made good. There was no appreciable capital loss except for the small dropping in price, noticeable in all three classes, characteristic of the rising interest rate. The second class of bonds, in turn, showed two cases of defaulted interest, one instance of nearly total loss, and two instances of large capital losses. The fund accumulated was $214,000. The third or speculative group of bonds showed eleven cases (out of 50) of defaulted interest, five cases of large capital losses, and five cases of nearly total loss of capital. Notwithstanding these losses, the large interest returns resulted in a fund of $246,000. In other words, considering the value of the savings bank funds (interest accumulations and current principal value) as 100, the high to medium grade had a value of 110, and the speculative bonds a value of 126.

H. F. Bergstresser and J. B. Jones chose 100 bonds representative of three classes—(a) legals for Massachusetts and New York, (b) medium-grade bonds (not legal in 1900 but yielding up to 5%), and (c) low-grade bonds yielding more than 5% in 1900. These 300 bonds, a random selection of each class, were conceded to have been bought October 1, 1900, and held—except for total losses or maturities, and in the latter case reasonable substitutions were made—until October 1, 1922. Such a period covers roughly four industrial cycles and the starting and ending dates represented, in their opinion, approximately analogous points on different cycles. Two computations were made—(1) bonds on an amortized basis, as of October 1, 1922, (2) bonds sold as of October 1, 1922, and capital losses and gains included in income. The average yield of the three groups according to the two computations is as follows:

1. AMORTIZED VALUES.

	Average Annual Yield	Ratio
Legals	3.46%	100
Medium	4.64%	134
Speculative	5.77%	166

2. BONDS SOLD OCTOBER 1, 1922, AND LOSSES TAKEN.

	Principal Losses During Period
Legals	0.
Medium	+$ 37.
Speculative	— 4,112.88

Losses on Sale	Total Losses	Average Annual Yield	Ratio
$10,226.66	$10,226.66	3.03%	100
14,925.56	14,878.56	3.99%	135
5,351.30	9,464.18	5.50%	183

Burnham Bowden made a comparison of savings bank legal railroad bonds with other non-legal high-grade railroad bonds. A study was made, throughout a long period from 1892 to 1922 of the purchases of railroad bonds (Massachusetts legals) of two long-established, ostensibly well-managed Boston savings banks—The Provident Institution for Savings for the Town of Boston, and the Suffolk Savings Bank for Seamen and Others. The total railroad bonds of these two large Boston savings banks, purchased between 1892 and 1902, were, as of 1902, compared with the average of 87 high- to middle-grade railroad bonds yielding between 4¾% and 5¼% as of January 1, 1902. The accumulation of interest, with principal gains and losses, of both groups was computed as of January 1, 1922, with the following results:

Railroad Bonds	Average Maturity	Initial fund (market)	Par
Savings	1928	$105,020	$100,000
Medium	1933	101,975	100,000

Apparent depreciation of principal	Total accumulations—interest and capital losses corrected to $100,000 initial investment	Ratios Corrected	Annual Interest Rate
30.4%	$182,275	100	3.17%
17.7%	246,743	136	4.62%

It is obvious that, during a period of rising pure interest values such as the period covered, the advantage would be slightly in favor of the savings bank bonds owing to slightly earlier maturity.

the intention of devoting to it the study, care, attention to detail, and devotion that is required to make any business a success; in other words, we are considering the administration of the investment of funds with the explicit purpose of obtaining not only pure interest and such premiums as will balance the losses but also a positive business profit as well. These principles, however, apply only to investment on a large scale with this explicit purpose; they do not apply to the investment of small personal funds. Especially do they not apply to the business or professional man who saves a few hundred or a few thousand dollars a year. The possible investment profit resulting from the application of these principles would be very small compared with the profit which such a business or professional man would obtain from the same time and study devoted to his own business or profession. This matter is very important, and I would not pass it over without further comment. Far wiser is it for a business or professional man to devote himself wholeheartedly to his business and invest the surplus in low-yield, negative-profit bonds in which the chance of individual loss of principal is very slight—liberty bonds, municipal bonds, and the underlying railway issues—than to devote such time and attention to the subject of investment as would warrant the expectation of a business profit in this field. It is to be regretted, we repeat, that we have not developed the investment trust in this country, so that the small saver can obtain easily broad distribution and administrative skill—and with it true business profit.

One other illustrative problem may be cited to show what is meant by group selection among investments. It has been contended by many stock-selling houses, ever since the trust-promotion period of the late nineties, that preferred shares of industrials afforded excellent investments. The usual allegations were that the income yield was large and that the preferred shares, having in the majority of cases no bonds senior to them, were in a prior lien position analogous to bonds. This contention was made in spite of the fact that in the real test of investment security, at the time of the reorganization of an industrial corporation, preferred shares are seldom given more than a slight and uncertain advantage over the common shares. Long before a reorganization has become necessary, the management has allowed notes and merchandise debts to accumulate which not only assume a senior position to the preferred shares but, in too many cases, absorb all the proceeds of a receiver's sale of the corporate assets. Nevertheless, not all industrial corporations with preferred shares have to be reorganized, so that any broad judgment of the wisdom of investing in industrial preferred shares, as a class, would have to be tested by other means.

To determine the relative value of industrial preferred stock as a class, an exhaustive study of the current values of every industrial preferred stock of investment importance issued since January 1, 1915, has been prepared. There were 607 such issues. On January 1, 1923, no quotations, not even from the issuing houses, could be obtained for 70 issues, and the investment value of these issues can be left to the imagination. At least nominal quota-

Footnote 8 continued from page 460:

It is interesting to compare these ratios with those of Mansfield and Bergstresser and Jones, as given in the preceding paragraphs. The investigations were entirely independent; different lists of bonds were used and somewhat different statistical methods followed.

GROUP	Number of Issues	Aggregate Par Value (000 Omitted)	Issuing Price (% of Par) Average	Present Jan. 1, 1923 Value (% of Par) Average of Issues	Number of Issues Jan. 1, 1923, having value			
					A 0 to 25	B 26 to 90	C 91 upward	Called (Par or above)
1. Automobile	100	$ 310,954	101.0	57	30	39	20	11
2. Textile	66	93,720	99.5	86	6	21	32	7
3. Food (including Tobacco)	60	119,350	98.5	64	15	24	19	2
4. Distributing and Merchandising	48	74,965	97.3	87	3	11	27	7
5. Oil and Mining	29	79,600	98.8	45	14	9	5	1
6. Building Materials	14	19,976	97.7	85	2	2	9	1
7. Shipbuilding and Munitions	16	31,340	100.3	47	9	2	2	3
8. Metals	43	105,558	99.0	76	4	18	13	8
9. Paper	16	26,850	96.2	82	2	3	10	1
10. Consumers' Goods (Miscellaneous)	39	77,456	97.2	80	6	9	17	7
11. Paints and Chemicals	27	48,694	100.2	68	6	9	11	1
12. Leather	7	23,500	99.6	61	1	4	2	0
13. Producers' Goods (Miscellaneous)	52	53,588	99.5	73	13	11	23	5
14. Miscellaneous	20	31,810	100.4	75	3	7	10	0
Totals		$1,097,361			114	169	200	54
Averages			99.5	70½				

Had the five large issues (in excess of $25,000,000) been included the results would have been little different. The average issue price was 96.7 and the current average quotation Jan. 1, 1923, was 66.

tions of value could be obtained for the remaining 537 issues. The average price at time of issue was 99%. On January 1, 1923, the average price of the whole group was 70½, after full allowance had been made for those issues which had been called at a premium. The median of time of issue was in the latter part of 1918. The average dividend rate promised was a little over 7% a year, so that if the investor had made a random selection of preferred shares during the last eight years, his total interest yield would have been less than his present loss of principal. It is interesting to note also that of the 537 issues of which present quotations could be found 114 were quoted at less than 25; and, of these, 59 were practically worthless.[9]

There are, of course, many groups of investment securities in which statistical studies may be applied. The purpose of these few illustrative examples is merely to show that, by the help of laborious investigations, certain general principles of investment expediency can be developed, and out of these principles something approaching an investment science. The incessant changes in the economic backgrounds, the shifts of public taste and social standards all indicate how uncertain and unreliable any such principles must be. Nevertheless,

[9] This very valuable study was made by S. F. Nicholson of the present graduating class of the Harvard Graduate School of Business Administration. Certain detailed results of his study are valuable and instructive.

The list includes every industrial preferred stock issued between June, 1915, and June, 1920, referred to among the new issues in the *Commercial and Financial Chronicle*, amounting to $100,000 or more, except that five issues in excess of $25,000,000 each were omitted because of their extreme size. As indicated above, the inclusion of these large issues would tend to decrease rather than increase the present value of the whole group. The study included 607 issues, of which no quotations could be found in 1923 of 70 issues. Accordingly only 537 were statistically studied. The following table shows the annual rate of issue:

Year	1915-16	1916-17	1917-18	1918-19	1919-20
Number of Issues	87	85	48	68	249
Percentage	16	16	9	13	46

The table at the top of this page shows the 14 industrial divisions into which the group of 537 issues was divided, the number of issues in each group, the aggregate par value, the issuing price and the average present quotation. Added also are four columns showing the ranges of current values.

wise investment is a basis for the conservation of social capital, and the very complexity of the subject shows that the practical administration of investment funds is a business in itself requiring business ability no less trained and specialized than the administration of other businesses.

TESTING THE EFFECTIVENESS OF ADVERTISEMENTS

By DANIEL STARCH

IS it possible to measure the probable effectiveness of a series of proposed advertisements before they are used and before a considerable amount of money for space is expended? There is no question regarding the practical and economic importance of this problem. It arises every time an advertising program is being prepared. The executive necessarily would like to know whether the best and most potent appeals are being used in advertising his product and whether these appeals are being presented in the most attractive and effective manner. An advertiser of a food product asks, "Shall we stress the 'goodness' or the nutritive value of the food?" An advertiser of a shampoo asks, "Shall we stress beauty or ingredients?" An advertiser of automobile tires asks, "Shall we use the appeal of mileage, construction of the tire, or safety on the road?"

The answer to this question is only half the solution. The other half is—how may the appeals decided upon be presented most effectively? How shall they be stated? How shall they be presented pictorially? Every executive having to do with the preparation of advertising plans would greatly appreciate a valid and feasible method of solving these problems for his own business. The usual method is to depend upon his own personal judgment, or that of someone else to whom his advertising is entrusted. This is often little more than a mere guess.

The practical importance of these problems is emphasized when we realize that the same advertisement may appear in many different mediums, at a total cost of $75,000 or $100,000 for space. Thus, for example, in 1921 each of the chief advertisements of the Sun-Maid Raisin Company appeared in some 20 publications in which the total cost of space was in the neighborhood of $75,000 for each advertisement. This is not an uncommon occurrence. An advertiser of a toothpaste used in 1922 over 150 magazines and over 1,600 newspapers. At a given time the same copy might appear in all publications, aggregating a large expenditure for space. It is plain that under such circumstances it is imperative that every detail of an advertisement should be as effective as it can possibly be made.

The practical importance of these problems is further emphasized when we realize the literally enormous differences in the effectiveness of different advertisements in the average campaign. Few business concerns fully realize these differences, because the great majority of them have no direct way of ascertaining the actual effectiveness of any given advertisement or even of a series of advertisements. To illustrate this point, let us note the following actual cases:

Of a series of 15 advertisements for a player-piano, the best one brought 258 replies, while the poorest one brought one reply. The other 13 advertisements brought returns scattered all the way between these two extremes.

Of a series of five lathe advertisements, the best one brought 40 times as many inquiries as the poorest one.

Of a series of eight advertisements of a book sold entirely by mail, the best advertisement sold three times as many copies as the poorest one, differences in seasons and mediums being considered.

Of a series of seven insurance advertisements, the best one sold three times as much insurance as the poorest. Allowance was made for the variation in the sizes of the advertisements and the differences in the circulation of the various mediums used.

Of a series of fifteen typewriter advertisements, the best one was twice as effective as the poorest one.

Of a series of seven encyclopedia advertisements, the best one was over twice as effective as the poorest one.

Of eight advertisements for a calculating machine, the best one brought 380 inquiries and the poorest brought 92; of eight advertisements for a filing device, one brought 174 inquiries, while the poorest brought 62. In both cases allowance was made for differences in seasons. All advertisements were of the same size and appeared in the same mediums. These differences are due, therefore, primarily to the copy and layout of the advertisements.

Examples might be multiplied indefinitely. The fact is that the differences in the effectiveness of the advertisements in any given typical series are large. The statement is true whether the results are measured by inquiries or by actual sales. As I shall show by later results, the average advertisement appearing in our better-grade mediums has only approximately 50% of the effectiveness possessed by the 10% best advertisements in the same mediums. A very large proportion of the advertising does not possess more than 25% to 30% of the effectiveness possessed by the 10% best advertisements. These facts emphasize the fundamental importance of our problem, namely, can we determine with an acceptable degree of reliability the probable effectiveness of advertisements before they are used and before any money is expended upon them?

Returning once more to the series of fifteen player-piano advertisements, we find that if all fifteen advertisements had been as effective as the best one, they would have produced 3,870 replies instead of only 796.

Referring to the insurance advertisements, we find that if all seven had been as effective as the best one, the resulting sales would have been $105,000 instead of $74,000, a difference of $31,000. Similar comparisons would hold for the other cases cited.

Practically, then, before any large amount of money is expended for space, the advertising executive would like to eliminate the weak advertisements and substitute stronger ones in their places.

I. Methods of Testing Advertisements

The experimental work which has recently been done on the problem of determining the effectiveness of advertisements and the chief elements in them has demonstrated conclusively that this can be done; and done with a satisfactory degree of reliability. The problem resolves itself primarily into an attempt to measure the extent to which a given advertisement or a series of advertisements fulfils the functions that it must fulfil in order to be successful.

In general, an advertisement must fulfil the following functions:

(1) It must attract attention.

(2) It must arouse interest
(3) It must produce conviction
(4) It must impress the memory
(5) It must produce a response or action

Or, put in somewhat different form, an advertisement to be successful

(1) Must be seen
(2) Must be read
(3) Must be believed
(4) Must be remembered
(5) Must be acted upon

In general, every advertisement must accomplish these ends, although there are exceptions. When an article is sold once, and by a single appeal, memory is perhaps not involved. Many advertisements do not aim to produce a response immediately, although most advertisements are expected at some time to lead to action.

The problem now resolves itself into devising methods for testing these various functions. Let us take the first function, that of getting attention, or of being seen. Suppose we wish to determine which of the advertisements of a proposed series for a given product will best get the attention of the prospective reader and buyer.

Let us assume, for the sake of simplicity, that ten advertisements for this product have been prepared and that they are ready in proof form or in the form of photostats. Suppose, however, that before they are issued we wish to determine whether they are likely to attract the attention of the readers and whether they are at least as good as those of competitors. To measure the relative attention value of these advertisements, we may use one or more of several methods. I shall not describe in detail the technique of these methods, as it would require too much space here to do so in an adequate manner. One method consists of spreading all the advertisements on a table before a person and asking him to select the one that attracts his attention most, which next, and so on, to the last one. Other methods have also been used satisfactorily. It is important in making these tests that they be conducted with persons typical of the ones to whom the product is to be sold. For example, if a series of men's shoe advertisements is to be tested, the tests should be made with men typical of the class of men who buy this particular quality of shoe. If we are investigating baking powder advertisements the test should be made with housewives. If a given test is repeated with 25 or more persons under uniform, controlled conditions, we will have a reasonably accurate measure of the relative attention value of these advertisements. If advertisements of competitors are included in the test, we shall know quite definitely how they compare with the ones in which we are particularly interested. It is usually well to use more than one method for the sake of verifying the findings.

In the next place, we may wish to measure the interest value of a series of advertisements. It is obvious that the interest element is different from the attention element. An advertisement must not only be seen; it must also stimulate enough interest to be read. It will be read and examined only if the first impression stimulates sufficient interest. The interest element likewise may be tested in several ways.

Finally, we must test the convincingness of the text, or the favorableness of the impression created by the advertisements for the product, or the memory value of the advertisements, or other elements which may be important in a given case.

II. Results of Advertising Tests

Any given test should be carried out with 25 or more persons, so that the total tests for an extensive and important investigation may cover several hundred persons. However, a group of tests covering even 100 persons will give a very fair index of the relative value of the advertisements concerned. Care and judgment are required in planning the tests, in carrying them out, in handling the results by proper statistical methods and particularly in interpreting the findings.

A considerable variety of tests has been used for these purposes and other methods of a similar nature may be devised. Each particular product or situation has problems of its own which require the development of new methods or the adaptation of old ones. However, the fundamental conception of the scientific nature and procedure is essentially the same. By adaptation of these methods the various elements of advertisements may be tested, depending upon the importance of these elements. Thus, for example, it may be desirable in the case of a given series of advertisements to test the effectiveness of the headline, or the pleasingness of the colors to be used, or the relative efficacy of color versus black and white, or the interest and appealing value of the picture, or the relative importance of illustration or text, or the determination of the strongest appeals to be used, or the value of various kinds of type or of layout and arrangement.

The query, however, which must be raised at this point is, all this is well and good as a matter of scientific interest and curiosity, but will these tests really show what the relative effectiveness of a given series of advertisements will be when they get out to the people who are to be reached? These tests may be all right, as far as they go, but will they really indicate which of the proposed advertisements will actually be effective and which will not? Is not the test situation too artificial and is not a person's reaction too self-conscious to be of any value? I have been especially interested in this particular aspect of the problem, because the final proof of the validity of these methods is the important point. The ultimate criterion of validity is the extent to which the results of these methods check up against the actual effectiveness of advertisements when satisfactory records of inquiries, returns, or sales can be obtained.

In pursuit of this inquiry, I secured during the past three or four years from firms in various lines of business a considerable number of sets of advertisements for which records of actual returns or sales were available. Tests of the nature here mentioned were carried out with these advertisements. In most instances, we did not know what the returns secured by the various firms were until after we had made the tests. Then we compared the test results with the actual returns or sales as the case happened to be.

Before showing to what extent the test results and the advertiser's returns did or did not check up, I wish to give in some detail the results of one group of tests made upon a set of seven insurance advertisements. Three types of tests were carried out—one to test the attention value of the advertisements, the second to measure the value of the headline, and the third to measure the convincingness of the text. The following table gives the results. The first column gives the letters by which the various advertisements are designated. The second column gives the

average rank of each advertisement in the attention test. Thus, A had an average rank of 2.2. With some persons it ranked first, with others second, with still others third, etc. Its average rank was 2.2. The third column gives the average test rank for the headlines of the various advertisements. The fourth column gives the average test rank for the convincingness of the text of each advertisement. The fifth column gives the averages of the three tests combined, and the sixth column numbers the various advertisements in order according to the averages of column 5. Column 6 shows that advertisement A, according to the test, is the best one, advertisement D is the second best, etc., and advertisement C is the poorest.

How, now, do these test results compare with the actual returns? The firm which had used these advertisements kindly sent the number of inquiries brought by each advertisement, the amount of business resulting from each one, the date on which each advertisement appeared, and also the names of the mediums in which each had appeared. From these data it was possible to compute the returns for each advertisement in proportion to the size of the space used, the circulation of each medium, the probable effect of the season of the year, and the relative quality of the readers of each medium as indicated by the ratio of sales to inquiries.

The last column in the table gives the order of the effectiveness of these seven advertisements as thus computed on the basis of the actual returns secured by the firm.

An inspection of the table will show a close agreement between the final test ranks and the firm's ranks of returns. Advertisement A was the best one according to the tests; it was also first according to the returns. The only discrepancy is that advertisement D is second according to the test and fourth according to the firm's returns, while advertisement G is third according to the test and second according to the returns. Likewise, there is a slight difference on advertisements B, E, and C.

The exact amount of agreement may be expressed in statistical terms by what is known as a coefficient of correlation. For the sake of clearness we may refer to the coefficient of correlation as the percentage of agreement between the two sets of ranks. This coefficient of correlation or percentage of agreement between the final test order and the

Advertisement	Attention Test	Headline Test	Test of Text	All Tests Combined	Final Rank According to Tests	Order of Firm's Returns
A	2.2	2.3	2.2	2.2	1.	1.
D	1.9	3.5	3.3	2.9	2.	4.
G	4.0	3.2	3.1	3.4	3.	2.
B	3.6	3.9	4.3	3.9	4.	3.
F	5.4	5.2	5.0	5.2	5.	5.
E	5.3	4.2	6.0	5.3	6.	7.
C	6.6	6.8	5.0	6.1	7.	6.

firm's order, as computed by the usual statistical methods, is .86.

This is a close agreement which is, of course, evident from a direct comparison of the ranks. Obviously the results of the tests check up very satisfactorily with the actual effectiveness of the advertisements. It would have been a distinct advantage to this firm to have used advertisements of the type of A, D, and G, rather than of the type of F, E, and C. Considering the size of space, circulation of mediums, and quality of readers, we find that advertisement A brought three times as much business as advertisement C. One case is not sufficient to demonstrate the general validity of the methods proposed.

To pursue this matter further we tested, in the next place, a series of fifteen advertisements for a typewriter.

Final Rank According to the Tests	Order According to the Firm's Returns
1	1
2	3
3	4
4	5
5	12
6	7
7	2
8	9
9	13
10	6
11	10
12	11
13	14
14	15
15	8

These advertisements were tested with respect to their attention value, interest value, and convincingness of the text. Without giving the results in detail for the various tests, the above table shows in the first column the ranks as determined by the tests, and in the second column the ranks as determined by the returns of the firm.

Again the agreement is quite close, although not so close as in the case of the insurance advertisements. The percentage of agreement between all tests combined and the actual returns secured by the firm is .71. The only discrepancies of importance are on advertisement number 5, which is fifth according to the tests and twelfth according to the returns; and on advertisement number 15, which is fifteenth according to the tests and eighth according to the returns. It may be pointed out here that often it is very difficult to compute the relative order of returns brought by a series of advertisements so as to allow for differences in size of space, circulation of mediums, quality of readers, and the like, even when careful records are kept of the inquiries and of the business resulting therefrom. A part of the discrepancy between the test results and the firm's rank according to returns is undoubtedly due to this factor.

The third case is that of a series of eight advertisements for a book which is sold entirely by mail. These advertisements were likewise tested with respect to their attention value, convincingness, and headline value. The results are given in the table on the following page, which shows in the first column the final ranks according to the tests, and in the second column the ranks as determined by sales.

The correlation or percentage of agreement is .55. This again is a satisfactory agreement. The only important discrepancy is on the last advertisement, which is eighth according to the tests and third according to the publisher's returns. This discrepancy is explained in part by the difficulty of ascertaining in a completely reliable manner the relative returns so as to allow properly for variations due to

seasons of the year, mediums, sizes of circulation, and so on; and in part by the fact that some of the tests in this case were made with persons who were not entirely representative of the persons who buy this particular book.

Final Rank According to the Tests	Order According to the Firm's Returns
1	2
2	4
3	1
4	5
5	6
6	7
7	8
8	3

Considering these factors, the results are quite satisfactory. In fact, I am inclined to believe that a series of carefully conducted tests gives a more reliable measure of the effectiveness of a set of advertisements than records of inquiries or sales, unless these are sufficiently extensive to iron out the influences due to such factors already mentioned as variations by season, sizes of space, circulation, quality of readers, and so on.

The fourth case is that of a series of seven advertisements for an encyclopedia. Tests were made to measure the attention value of each advertisement as a whole, the convincingness of the text, and the value of the headlines. The question may arise here in the mind of the reader, as to why the headlines were tested in the cases cited. The reason is that most of our tests have shown the headline to be a very important element in an advertisement—an element probably more important than most persons realize.

The results of these tests as compared with the actual returns are given in the following table. The first column gives the ranks according to the tests. The second column gives the ranks according to the actual returns. The publishers were good enough to supply the number of inquiries and the number of orders brought by each advertisement, the dates on which the advertisements appeared, and the mediums in which they appeared. In computing the relative ranks of the returns brought by the various advertisements, allowance was made as accurately as possible for the factors of space, circulation of mediums, seasonal fluctuations, and so forth.

The correlation or percentage of agreement between the order according to the tests and the order according to the returns is .72. Evidently the tests in this instance also give a reliable index of the relative effectiveness of these advertisements. The advertisement which is the best according to the tests was second according to the returns. The only two advertisements for which the difference is as much as two ranks between the test order and the order according to the returns are advertisements 2 and 3.

Ranks According to the Tests	Ranks According to the Firm's Return
1	2
2	4
3	1
4	3
5	6
6	7
7	5

In this manner the writer has made numerous tests with a total of 20 different sets of advertisements. In each case the firms concerned supplied the data of actual returns; with these the test results were compared. The following table contains a summary of the findings thus obtained, including the results of the four sets of advertisements

attention value and the headline are be in any testing situation

already described. The numbers in the four last columns are the correlations of each one of the tests with the actual relative effectiveness of the advertisements as measured by the returns brought.

Besides the attention value, the headline, and the text, several other elements were tested in some of the sets of advertisements mentioned, but it was found that in most instances these three factors are the most important. Other elements should be tested whenever it is probable that such other factors are of particular moment. It may be that the colors to be used, the picture, the text of the advertisement in separate form apart from the advertisement, or some other factor should be tested. The particular elements which need testing must be determined by the requirements of a given situation. Likewise, the methods of testing must be adapted to the particular case in question.

From this table two important points appear:

First, the results demonstrate that it is possible by means of brief but carefully conducted tests to measure with a high degree of accuracy the relative value of advertisements as a whole and of the various elements in the advertisements. The average correlation between the test results and the business returns is approximately .80. Second, the results show that certain elements in an advertisement are much more important than others. Specifically, the

Business or Commodity	No. of Advertisements	Attention Value	Headline	Text on the Advts	All Tests Combined
Life Insurance	7	.68	.79	.88	.86
Encyclopedia	7	.90	.38	.30	.72
Typewriter	15	.48	.75	.46	.71
Book	8	.46	.75	.36	.58
Lumber	2	1.00	1.00	1.00	1.00
Spray Pump	3	.83	.00	.00	....
Toothpaste	4	.40	1.00	.20	.80
Water Heater	4	....	1.00	....	1.00
Filing Device	8	.81	....	.53	.72
Filing Device	8	.76	....	.55	.70
Filing Device	8	.88	....	.02	.65
Condensed Milk	2	1.00	1.00	.00	1.00
Coats and Suits	2	1.00	1.00	1.00	1.00
Health Exercise	5	.43	....	.78	.75
Correspondence Instruction.	6	.59	.60	.71	.71
Correspondence Instruction.	6	.49	.89	.34	.78
Addressing Machine	3	1.00	.75	.50	1.00
Duplicating Machine	6	.68	.90	.56	.87
Calculating Machine	4	.40	.40	.40	.40
Calculating Machine	5	.50	.45	.60	.80
Average		.70	.78	.48	.79

attention value and the headline are each nearly twice as important as the text of an advertisement. This is indicated by the fact that the correlations for these two elements are nearly twice as high as for the text.

Besides the investigations here reported, similar comparisons between test results and actual returns have been made by Professor H. L. Hollingworth in the case of five lathe advertisements, for which he found an agreement of 100%; and in the case of fifteen player-piano advertisements, for which he found an agreement of 92%. Professor E. K. Strong found an agreement of 100% between the tests of three electric lamp advertisements and the returns brought by them. For another set of five advertisements the agreement between the test results and the inquiries was 100%.

There is thus a considerable array of experimental evidence to establish the validity of the test methods here proposed. The percentages of agreement in the cases cited range from .55 to 1.00, with an average of about .80. This evidence is sufficiently varied and convincing to demonstrate a satisfactory degree of reliability of carefully conducted tests for determining the relative effectiveness of advertisements.

The criticism that the situation of any test of this type is artificial, that it is impossible to secure a reaction from a person under test conditions which is comparable to that secured under the usual every-day circumstances in which advertisements are observed; in short, that such a thing cannot be done is pretty effectively met by these results. In view of the considerable number of instances in which the tests have been checked against the actual business returns, the answer is that it can be done, and that whatever artificiality there may be in any testing situation is inconsequential. We ought to add, however, that the validity of the method depends upon the scientific care with which the tests are made.

Another criticism sometimes urged is that a test made with a limited number of persons, even though it be several hundred, is no index of what the results would be for thousands or millions of people.

The answer to this point is that human nature in the mass is remarkably uniform as shown by an abundance of psychological and statistical evidence. If a chemist wishes to analyze the water supply of a city, it is not necessary for him to analyze all the water in the reservoir or in the city mains. He needs only to test a few samples here and there. If he wishes to analyze a carload of iron, he needs only to chip off a few samples here and there, and analyze them. Human beings are probably not so uniform in their make-up as the water supply of a city or the iron in a carload; in the mass, however, they are remarkably uniform. The proportion of marriages, suicides, automobile accidents, or the percentage of persons whose favorite color is green, or who like their steak rare is remarkably constant. Furthermore, these methods are not in any sense comparable to straw votes. There is as much difference between carefully conducted tests and the usual smoking-car straw votes on advertisements or on presidents as there is between a chemical analysis of food and a cook-book experiment.

Another point brought out by these tests is that the judgment even of expert advertising men is often wrong and that they are hardly better judges of what will appeal to the public at large than other observers of human nature. The

determine these points. This statement is fully borne out by several cases

closely at correct answers to many of the numerous questions which arise

fact that so many weak advertisements appear even in our best mediums and for products for which large sums of money are expended is ample proof of this statement.

The practical importance of developing and applying testing methods as a part of the program of preparing advertising plans and materials hardly needs to be pointed out. The validity of the methods when properly and scientifically applied is, I believe, fully established. Note, for example, how much greater the effectiveness of a series of advertisements would be, if the weak ones were eliminated at the start and stronger ones were put in their places. If the player-piano advertiser had used advertisements of the type of the best ones of his series of fifteen, he would probably have secured five to six times as much business from the same expenditure for advertising space. If the typewriter advertiser had used only the more effective advertisements in his series, he would probably have secured between two and three times as much business from the same expenditure for space. The same is true of the other examples cited.

In view of the tests here cited, we find that the average advertisement, even in high-grade mediums, has only about half the effectiveness possessed by the best 10% of advertisements in the same mediums and for the same products. Thus, a large national advertiser of shoes, whose advertisements were recently tested, would have made a 33% better and more effective impression if all his advertisements had been as effective as the best one in his campaign. The expenditure for space was $72,000. If all his advertisements had been as effective as his best one he would have made a $96,000 impression instead of a $72,000 impression.

The cost of a series of tests in connection with advertising plans of any importance whatever is trifling compared with the total expenditure for a season's or a year's advertising, or as compared with the greater effectiveness of the resulting advertisements.

The methods here proposed are not impractical theory; they are simply the common-sense application of scientific methods to advertising problems. Up to the present time the methods had not been developed and, what is equally important, their validity had not been established because they had not been checked against actual returns.

III. Conclusion

Eight or ten years ago, a questionnaire-field investigation as the preliminary ground work for advertising plans was regarded as a novelty. Today, such investigations are recognized as fundamentally important and are made quite commonly in connection with important advertising and sales projects. However, a questionnaire-field investigation, while basically important, furnishes only a part of the facts on which advertising plans may be based. It is not sufficient to make such an investigation. What is equally necessary is to test the advertisements based upon a questionnaire investigation. The questionnaire investigation may show that taste or health is the strongest appeal for a given food, or that style or wearing quality is the strongest point for shoes, but it will not show what the most effective presentation of the appeal may be. It will not show whether by picture or text or by what kind of picture or by what phraseology of text the point may be presented most effectively. Tests with the proposed advertisements themselves are necessary to

determine these points. This statement is fully borne out by several cases in which extensive questionnaire-field investigations were made, the results of which showed certain points as plainly the outstanding features to be emphasized in the appeals. Several copywriters and artists prepared advertisements which represented their best efforts to present these points. When these proposed advertisements were tested in proof form, they showed surprising differences in effectiveness.

The careful testing of the copy, text, illustration, and layout in which all the plans finally issue is a further important step in determining in advance as fully as possible the probable effectiveness of the proposed plans. A weak selling point presented in an effective manner will actually be more influential than a strong selling point presented poorly. By means of properly conducted tests, it is possible to arrive more closely at correct answers to many of the numerous questions which arise.

Besides these questions, it is likewise possible to apply similar methods of testing to such problems as the selection and designing of trade-marks, the selection of brand names, the selection of cartons and package designs, or to the determination in the many doubtful cases of trade-mark infringements as to whether and to what extent given trade-marks actually infringe upon each other or cause confusion in the minds of the buyers.

Thus, scientific methods, applied to the numerous problems of advertising, promise to make advertising more effective and to put it on a more economical level. When the reliability of these methods becomes more generally known, probably few important advertising programs will be carried out without first making a careful testing of the copy and the material to be used.

out this point of view. Moreover, there may be the additional argument of $10,000,000 and over. The expenses that were approximately comparable

OPERATING EXPENSES IN BANKS AND TRUST COMPANIES

By FRANK K. SANDERS, JR.

ONE means of developing more efficient operation of banks and trust companies which has not been utilized adequately is the collection and use of comparable operating expense figures. How large a sum should be paid as salaries and wages? What proportion of expense should go into rent of the bank building? Are the net additions to profit satisfactory? The answers to these and other questions can be obtained in part by a comparison of the bank's expenses and profits over a series of years. But although its profit and loss statement shows whether the business is increasing or falling behind year by year, and also the effect of changing conditions upon expenses, the bank executive needs to know in addition whether he is operating as economically as other bankers. He can secure guidance in management, in addition to the information furnished by his own accounts, if he is able accurately to compare his expense with the expenses of other bankers for the same period of time and under like conditions.

The Federal Reserve Bank of Boston has made a comparison of the operating expenses of its 433 member banks for 1921[1] and is planning to continue the work. The figures for 1922 will probably be available for publication soon.

In compiling its report, the total of loans and investments less borrowings from the Federal Reserve and other banks was selected as the figure upon which to base the expense percentages.

Several considerations influenced the decision to use net loans and investments as the basis of comparison. It was desirable to select a figure which would represent the real volume of business done. Although it is essential to have deposits before loans or discounts can be negotiated, the latter item plus investments represents the principal source of earnings of a commercial bank from which operating expenses are met and a net profit derived. In order that the expenses of banks borrowing heavily from the Federal Reserve Bank or other institutions should not be minimized in comparison with those of non-borrowing banks, the figure for loans and investments less borrowed funds was taken to represent 100%.

Deposits, rather than loans and investments, might have been used as the basis of a comparison of operating expenses on the ground that bankers are accustomed to consider deposits as the foundation of their business and have adjusted their accounting methods accordingly. The size of the expense item, Interest Paid on Deposits, might bear

[1] The Chairman and Federal Reserve Agent of the Federal Reserve Bank of Boston, Mr. Frederic H. Curtiss, has published a report on the operating expenses of the New England member banks for 1921, using a method somewhat similar to that employed by the Harvard Bureau of Business Research in comparing the costs of doing business in several wholesale and retail trades. He was limited to the items of expense which are specified on the forms issued by the Comptroller of the Currency for national banks and by the Federal Reserve Board for trust companies for the semiannual reports of earnings, expenses, and dividends.

OPERATING EXPENSES OF MEMBER BANKS IN FEDERAL RESERVE DISTRICT NO. 1 IN 1921

proportionately with the size of the institution and the community served;

out this point of view. Moreover, there may be the additional argument as to what factors, apart from the nature of the banking business undertaken, are considered in locating a bank building, the convenience of those making deposits or of those seeking loans.

Although it is vital for the bank to receive deposits and important for it to increase them, nevertheless it is in business for the purpose of using at a profit the funds at its disposal by making loans, taking discounts, and investing the residue. It is desirable that this be accomplished with the maximum operating efficiency, and the test of that efficiency is a comparison of its expense of doing a loaning business with that of other banks which carry on operations of similar size.

The banking business should be regarded as a series of profit and loss operations rather than in terms of a balance sheet. Deposits are not by themselves a source of profit. It is a question of how the resources are used. As the loans and investments represent this use and are the source of expense payments and of distributions to stockholders and additions to surplus, this item is used properly as the basis of a comparison of operating expenses.

Operating Expenses in New England for 1921

In the first report covering New England institutions, issued in December, 1922, the banks and trust companies were classified into three groups, according to the amount of their net loans and investments. Group A included institutions with earning assets less than $1,000,000; Group B embraced the banks with assets from $1,000,000 to $9,999,999; and Group C consisted of banks with net loans and investments of $10,000,000 and over. The expenses that were approximately comparable for all members were computed for each bank as percentages of the selected base, in other words, the expense per $100 of loans and investments; then the common figure for each item of expense was determined. This common figure was the percentage found to be most nearly typical of the greatest number of banks; it was used to avoid giving weight to a few excessively high or exceptionally low figures. In addition, the highest and the lowest percentages for each item were indicated in the report.

This common figure is the one that is most useful to the individual banker in checking his own results. With it he can compare his percentages with those in his own group. If he finds that his own percentage for any item is too high, the next step obviously is to make a careful examination of the management of that part of his business in order to determine whether that expense can be reduced. The maximum advantage will be gained by continuing to keep down those expenses which show the most favorable comparison and to bring his other expenses into line, if possible, with the common figure for his group. By utilizing this method of comparison, the many independent banking institutions in this country will secure one of the advantages of large-scale branch banking, namely, economical operation, or at least a guide to it, without introducing the features of branch banking to which numerous bankers object.

With the potentialities contained in this form of analysis, it will be possible for the Federal Reserve Banks to render a valuable service to their member banks. The essential safeguard, that the media through which the figures are collected be trustworthy, is assured.

ure for a bank with $4,000,000 of loans and investments, for example, was $40,- of real estate subject to local taxation and that part of real estate represented

OPERATING EXPENSES OF MEMBER BANKS IN FEDERAL RESERVE DISTRICT NO. 1 IN 1921

Net Loans and Investments = 100%

Net Loans and Investments of	Group A Less than $1,000,000	Group B $1,000,000 to $9,999,999	Group C $10,000,000 and over	All New England Member Banks
Number of Banking Institutions	186	216	31	433
Gross Earnings	6.0%	6.4%	7.2%	6.2%
Interest Paid	0.4	1.8	2.2	1.6
Salaries and Wages	1.2	1.0	1.0	1.0
Taxes	0.4	0.4	0.4	0.4
Total Expense	4.1	4.7	5.4	4.2
Total Net Income	2.4	1.8	1.8	2.0
Total Losses	0.6	0.8	1.0	0.6
Net Addition to Profits	1.8	1.1	0.8	1.2
Operating Ratio (expense to gross earnings)	62.5	71.0	77.0	68.0

Analysis of Operating Expenses

As is shown in the summary, there was a tendency for the gross earnings in 1921 to be larger in the banks with the larger earning assets. The report states that this tendency likewise applied to the size of the community in which the banks were located. The banks in Group A reported a common figure for earnings of $60,000 and less, depending on the size of the net loans and investments of the individual banks. The middle-sized banks earned from $64,000 to $640,000, while the larger institutions had gross earnings of $720,000 and over. One of the banks in Group A reported the highest relative earnings; this bank, however, was a heavy borrower from the Federal Reserve Bank and not typical of its group. Although practically all the gross earnings of the New England banks were derived from interest and discount operations, the larger banks evidently had a good proportion of earnings from other sources. Otherwise, the common figure of over 7% would be high for the district in 1921.

Except in Group A, Interest Paid on Deposits represented the largest single item of expense. This item increased proportionately with the size of the institution and the community served; in the large Boston banks it represented 43% of the operating expenses and consumed one-third of the gross earnings. For example, in a bank with loans and investments of $750,000 the amount of interest paid was $3,000; in one with earning assets of $5,000,000 the interest amounted to $90,000; while in an institution with loans and investments of $20,000,000 this expense was $440,000.

Local banking customs and competitive conditions, however, as well as the size of the bank, seemed to be factors of importance in establishing the amount and rate of interest paid, since Group A and Group B reported higher maximum percentages than did group C. If this is true and the banks are provided with a common figure for comparison, it may be possible to decide whether the custom is wise and the competition is mutually advantageous. In this connection, it is pointed out in the report that the banks in Maine, Massachusetts, and Vermont paid more on their deposits than institutions in Connecticut, New Hampshire, and Rhode Island. That this item is of particular importance to the larger banks is evident from the fact that the average figures for the four groups show that the larger banks paid interest equal to 30% of their gross earnings; the middle group paid 28%; the small banks paid 6.6%; while the common figure for the 433 banks was 25% of the gross earnings.

Salaries and Wages paid showed a different tendency, in that the relative importance of the item decreased as the size of the bank increased. The report states that this expenditure represented one-half the total expense in the smaller banks and one-third in the large metropolitan institutions. The common fig-

the banks, in both Group A and Group B, losses were reported by individual

There are several other items of expense which should be included for

ure for a bank with $4,000,000 of loans and investments, for example, was $40,000.

The greatest degree of variation in this item occurred in Group A. Assuming that the banks reporting the highest and lowest percentages had net loans and investments of $500,000, the salaries and wages paid by the first bank amounted to $26,000 as compared to $1,500 by the second, and $5,000 for the general average. This raises a question that the executives of small banks may well consider. Many of these institutions are owned and operated by one or two men, perhaps with other interests as well. It may be their policy either to charge practically no salary for executive service and take remuneration through dividends or to charge a disproportionate amount as salary, taking small dividends. The tax situation also may be a factor of importance. With comparable figures available for the New England territory, it would be advantageous for each reporting bank to charge salaries at the going rate so that it could compare the relative size of this item of expense with the common figure for the group of which it is a member.

The item for Taxes tended to be uniform, the common figure for a bank with earning assets of $2,000,000 being $8,000 and for a bank with assets of $10,000,000, $40,000. Several banks in Group A and Group B reported no tax expense. In one case at least this was due to inaccurate bookkeeping, the sum being charged to Reserve for Taxes and later paid from that account without a charge to Taxes. A few Massachusetts member banks were able to take full advantage of the feature of the Massachusetts franchise tax law whereby they could deduct from the fair value of their shares the value of real estate subject to local taxation and that part of real estate represented by their interest as mortgagees in taxable real estate located in the Commonwealth.

Total Expense and Profits of the Year

While the larger banks tended to have relatively higher percentages for total operating expense, the variations within the groups were greater as the institutions decreased in size. This may be due to the fact that the larger banks have standardized their operations more completely and paid more attention to their internal operating records. The relation of expense to gross income, the operating ratio, brought out this same fact. Although the common figure increased with the size of the banks, the difference between the high and low percentages in Group A was much greater than in Group B. In Group B, in turn, the difference exceeded that in Group C. Regardless of size, banks in Boston tended to have larger ratios than those in smaller communities. Although the common operating ratio for the 433 banks was 68%, many operated above 85% and many below 50%.

The statement is made in the report that the larger banks of any community tended to have the more satisfactory net earnings. Further study may establish the principle that a small bank in a small community has a higher earning capacity than a bank of equal size in a large city and, by virtue of its dominant position in the town, has a rate of earning capacity on its volume of business equal to the more powerful metropolitan institutions.

Although the common figures for losses were proportionate to the size of

A bank drawing finer distinctions, then, would be necessary, when the buildings

the banks, in both Group A and Group B, losses were reported by individual banks which were relatively more severe than any incurred by the thirty-one larger banks. Each of the latter institutions, however, found it necessary to charge off losses, while at least one bank from each of the other two groups showed no loss. However, the losses charged off were so dependent on individual policies of management, both in respect to the character of the loans made and the proportion of losses actually charged off, that no conclusions can be drawn from the 1921 figures.

As a result of the different items which have been mentioned, the smaller New England banks as a group made a relatively larger net addition to profits in 1921 than the larger banks. With a $1,000,000 volume of business the common figure for this item was $18,000; with a volume of $5,000,000 the average was $55,000; and the common figure for a volume of business of $10,000,000 was $80,000.

If similar summaries continue to be compiled, it will be possible to determine an approximately standard figure which a bank will be justified in assuming to be the proper return on its earning assets.

The Value of Comparing Additional Items of Expense

The prescribed forms on which the national banks and trust companies report their earnings and expenses to the Federal Reserve Banks at the present time specify only a limited number of items of expense. To bring into the scope of such a report additional items would necessitate a revision of the forms or the sending out of a questionnaire. What are some of the facts of value that might justify these measures? There are several other items of expense which should be included for comparative purposes. Though internal operating figures are prepared by banks for their own use, the only standards of comparison have been their own past performances.

One item which is not sufficiently specific is Salaries and Wages. The large banks would find it advantageous to have this item divided in detail. One possibility would be to consider it in terms of the two basic products in which the banking institutions deal, namely, credit and service. Credit operations are those which are directly profitable to the bank, for example, loans, discounts, acceptances, stocks, and bonds. Service includes the advice which is given on commercial or investment matters, the safekeeping of securities, and other functions which are not always lucrative in themselves. It would be of distinct value to know whether the expense of service is disproportionate to its return. Credit expense might be further subdivided between the commercial loan operations and the activities of other departments. A second method of dividing the salary and wage expense would be by the type of work done, for example, executive, tellers, collections, auditing, bookkeeping, stenographic, and the like.

The point of view of the large number of small banking institutions, however, is of major importance, and for their purposes it probably would be sufficient to divide the item between executive salaries and other salaries and wages. Most of these banks are interested primarily in commercial loan operations. If the salary and wage expense is out of line with the common figure, it will be sufficient to compare separately the expense of management and the other salary and wage expense.

ested for the purpose of provid- discounts, overdrafts, securities, banking

A bank drawing finer distinctions, then, will have this major classification for comparison with other banks and can use it in conjunction with its own internal operating figures.

Rent

Rent is an expense which should be significant to banks for comparative purposes. Not only would it show the relative expense between an owned and a rented building, but it would be of value in determining the relative utility of the office and mausoleum types of building.

Assume that the common figure for rent for banks having loans and investments of from one to ten million dollars is one-half of one per cent. A newly organized bank estimates its loans and investments at $5,000,000, or a bank with that volume is considering a new location. In deciding upon the location and type of building it would know, if comparative figures were available, that similar institutions were paying about $25,000 for rent. If it seemed advisable to pay a larger sum than that, the executives must realize that there were offsetting factors or that they must reduce expenses at some other point if they are to operate on a competitive basis.

In order to place all banks on the same basis for comparison, rent should be included as an expense whether the buildings used for operations are owned or leased. In some cases, banks rent both ground and buildings and pay a lump sum for rentals out of which the landlord pays taxes, repairs, and insurance, and sets aside a reserve for depreciation. In order to secure a proper comparison between the rent figure for such an institution and the rent figure for a bank that owns its building, it would be necessary, when the buildings are owned, to include an amount sufficient to cover taxes, repairs, insurance, interest, and depreciation on the owned real estate in the rental figure rather than to enter these items under other expense headings. Interest on mortgages on real estate also should be entered as a part of rentals.

Another reason why it is necessary to handle in this way the expenses which are incurred for owned real estate is that otherwise several other items would not be comparable. The item of Taxes, for example, of a bank which included taxes on its own real estate in this item would not be comparable with the figure for a bank in which taxes on real estate were covered in the rent expense. The most practical method would be to include all real estate charges in rent expense.

One method of estimating the proper amount to charge as rent, when both land and buildings are owned, is to compute a fair charge for interest on the investment in land and buildings used in the operation of the business, and add to this amount the taxes, repairs, insurance, and depreciation on this real estate.

Whether the land or buildings are owned or leased, whenever payments or allowances for interest, taxes, repairs, insurance, and depreciation are clearly in lieu of rent, they should be included in the rent figure and not be considered as any other expense.

The total net gain or loss for the year would not be affected by charging rent on owned real estate, since such rent would be entered later as a receipt after deducting the amounts charged for taxes, repairs, insurance, depreciation, and interest paid on mortgages on owned real estate.

Many banks own buildings which

were erected for the purpose of providing space for banking rooms on the ground floor, the remainder of the buildings being given over to office space. Some of this space is utilized by the banks and the rest is leased to firms or individuals. Whether or not the leases are granted on the basis of potential business, the banks should charge the space they occupy as rent expense and credit the remainder to a Rentals Earned account. The profitableness of real estate operations thereby would be differentiated from the profitableness of banking operations.

There are other expenses which it would be worth while to show. Interest paid on commercial and savings deposits should be shown separately, and it probably would be more satisfactory to have the losses charged off shown on a reserve basis as an operating expense rather than as the actual charges for the period. Advertising is a desirable item of expense. It is not the purpose of this article, however, to suggest the items which should be included in a comparable profit and loss statement of the maximum usefulness, but rather to indicate the desirability of having such a statement.

The Statistical Method Employed

The compilation of the operating expenses of New England member banks for 1921 introduced at least two questions as to the statistical method employed. On account of the fact that a weak bank which borrowed heavily from the Federal Reserve Bank would show high gross earnings, it has been decided to change the base used in 1921 and to use gross rather than net loans and investments as the basis for comparison for 1922. This item will consist of loans and discounts, including rediscounts, overdrafts, securities, banking house and fixtures, and real estate owned other than banking house. When the rent of owned bank buildings is included as an operating expense, the investment in bank buildings would be deducted from the item on which the operating expense ratios are based.

Real estate, in so far as banking operations are concerned, is more a cost of doing business than an earning asset. The policies of handling this item vary so widely between banks that it could be omitted wisely from the Loans and Investments item. Real estate is rarely valued accurately on the books, and as the cost is written down, the ratio to it of earnings increases. Two banks with loans and investments and earnings of similar size, but following different policies of charging off the cost of real estate, will show different relative rates of earnings.

With reference to the classification of the banks, a suggestion was made that the groupings be made according to the nature of the banking business done rather than according to the size. In the case of two banks of equal size, one in a town where 75% of the deposits were inactive or time and the other located in a prosperous industrial community with active demand deposits predominating, it was stated that the latter probably would require a larger and perhaps, because of the employment market, a more extensive organization.

A test made by the Federal Reserve Bank of Boston showed that this was not true in selected instances. Four national banks located in cotton manufacturing districts, two with a large proportion of time deposits and two with a small proportion of time deposits, were considered. One of the time-deposits banks had the largest relative expense; one of the banks in the

other group had the smallest, while the other two had approximately the same ratio of expense. The operating ratios indicated the same thing. One of the time-deposit banks paid the lowest relative interest on deposits, while one of the demand-deposit banks paid the highest. It was shown also that the banks having a large proportion of time or savings deposits apparently did not have an abnormally high ratio of securities owned to loans and discounts.

An attempt to classify the banks by the nature of the deposits or by the nature of the investments would result, therefore, in as miscellaneous a grouping of the banks as is found when they are classified by the size of the loans and investments.

Conclusion

The investigation which was made in New England for the year 1921 has proved that it is practical to compare the operating expenses of banks and trust companies. The cooperation of the Federal Reserve Banks in this line of activity can be of material assistance to their member banks just as the work of the Harvard Bureau of Business Research has been of direct help to wholesalers and retailers. By comparing their own figures with the reports on operating expenses published by the Bureau, representatives of several trades have been able to know just what items were out of line. In one case, for example, a retailer found that his Wages of Sales Force item was higher than the common figure that the other stores reported and by concentrating his attention on that particular problem and keeping a record of sales per salesman, he was able to reduce this expense. The banker is interested in the same problem; the businesses are similar in that they aim to operate with the degree of efficiency that will assure the maximum of profit consistent with conservative management.

As comparisons of operating expenses are carried on over a period of years, the figures will increase in value. The common figures will become more acceptable as standards by the weight of accumulated evidence.

The inclusion of more operating expense items than now appear on the forms provided by the Comptroller of the Currency and the Federal Reserve Board will increase materially the value of the work. Executive salaries should be differentiated from the salaries and wages of the clerical force. Rent should be shown as a separate item of expense.

The continuance and development of comparisons of operating expenses by a dependable agency will be of assistance to banks and trust companies in increasing their efficiency of operation and thereby improving the already valuable service they are rendering in their communities.

DEPARTMENTS

SUMMARIES OF BUSINESS RESEARCH

Short-Time Investments in Bonds by Commercial Banks..... 484
Labor Turnover Costs in a Shoe Factory..... 490

CASE STUDIES IN BUSINESS

The Mail-Order Policies of a Department Store..... 495
The Utilization of an Acquired Competitive Brand..... 499

REVIEWS OF BUSINESS LITERATURE

Lionel D. Edie, *editor*—The Stabilization of Business..... 503
S. S. Huebner—The Stock Market..... 503
Edmond E. Lincoln—Applied Business Finance..... 504
Wilmot Lippincott—Outdoor Advertising..... 505
Lamar Lyndon—Rate-Making for Public Utilities..... 505
James O. McKinsey and Stuart P. Meech—Controlling the Finances of a Business..... 506
Book Notices..... 507

THE DEPARTMENTS OF THE HARVARD BUSINESS REVIEW

THE material in the Departments of the Review presented by the Student Editorial Board is chosen with regard to its interest to business executives and to the possibility of utilizing most effectively the resources at the command of the members of the Board.

The first Department, "Summaries of Business Research," comprises summaries of the results of the investigation of various business subjects. "Case Studies in Business," the second of these Departments, was suggested by one of the outstanding characteristics of the Graduate School of Business Administration, the case method of teaching. Case studies are based upon the actual experiences of business concerns; to avoid disclosure of confidential material, however, it is necessary to disguise the names of the concerns. The last of the Departments contains critical reviews and short descriptions of new books of interest to business men.

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SUMMARIES OF BUSINESS RESEARCH

SHORT-TIME INVESTMENTS IN BONDS BY COMMERCIAL BANKS

THE bond account of a commercial bank is ordinarily built up from funds which are available for one of three reasons. In case the demands of a community for loans are always less than the loanable resources of an individual bank, a permanent bond account may be carried. Regardless of loan demands, banks usually hold some bonds to serve both as earning assets and as secondary reserves. In varying degree, also, most banks play in and out of the bond market, according as surplus funds are increased or diminished by changes in the demand for commercial loans. It is with these temporary investments and their usual time relationship to the position of the bond market that this discussion is concerned.

Security Holdings of Banks, 1919-22

Commercial banks are usually unfortunate bond buyers, because the time when surplus funds are likely to be available does not coincide with the time when bond prices are most attractive for purchase. The situation is illustrated in the recent period of credit expansion and the succeeding months of deflation. According to the *Annalist* index, bond prices reached their lowest point in May, 1920, and returned almost to that point in December, 1920, and again in June, 1921, after intervening fluctuations upward. During this period of low prices, however, the banks were least able to buy because of the heavy expansion of loans and discounts which reached their peak in November, 1920. The ability of the banks to find surplus funds for this purpose was lessened, also, by the decline in deposits which accompanied the last few months of credit expansion.

In the months following November, 1920, loans were liquidated, but the funds received were seldom considered available for reinvestment in bonds. From November, 1920, to March, 1922, the loans of the member banks of the Federal Reserve System declined 2,795 millions, but 1,383 millions of this decrease was caused by canceling deposit liabilities. During the same period the surplus funds resulting from an excess of the decrease in loans over the decrease in deposits, together with a decline in the net balance of cash, reserves, and inter-bank indebtedness, made possible the payment of 2,143 millions of indebtedness to the Federal Reserve Banks. Stocks and bonds owned increased only 204 millions, and most of this change occurred at the close of the period. (The 170 millions not accounted for by these figures were used to decrease the excess of other liabilities over other assets.) These figures are illustrated in Chart I, which shows that throughout this period indebtedness to the Reserve Banks declined proportionately as the contraction of loans, cash, and reserves exceeded the decline in deposits.

The figures denoting securities owned in the periods before and after the deflation of bank credits are evidence that

banks vary their bond holdings according as money is scarce or plentiful. From March, 1919, to June, 1920, their volume declined 1,642 millions while loans and discounts were expanded. On June 30, 1920, and December 31, 1921, the security holdings were practically the same, and in the intervening period of tight money, fluctuations were small. From December 31, 1921, to March 10, 1922, an increase of 97 millions was recorded, and from the latter date to June 30, 1922, a further rise of 805 millions.

A comparison of these changes with the respective positions of the bond market corroborates the previous assertion that banks are unfortunate bond buyers. Chart II indicates the relation between the movement of bond prices and the changes in volume of security holdings.

The sale of securities from March, 1919, to June, 1920, occurred on a falling market. The period following to the end of 1921 was one of low and gradually rising prices, yet no advantage was taken of them by the banks. New purchases were made only when the market approached its peak in 1922; and since a cyclical decline in prices commenced in September, 1922, it seems probable that these securities must be sold on a falling market with a repetition of the experience of 1919 and the first half of 1920. For the country as a whole, bank holdings in the spring of 1923 were temporarily frozen, since their sale on a market already declining would have depressed prices still more rapidly. It is not known what proportion of the security holdings were Government certificates and short-time notes, which are more liquid and less

Chart I

Changes in the Principal Assets and Liabilities of All Member Banks of Federal Reserve System

The figures on which this chart is based are taken from the monthly Federal Reserve Bulletin
Each series represents the sums of two or more of the detailed items reported by the banks

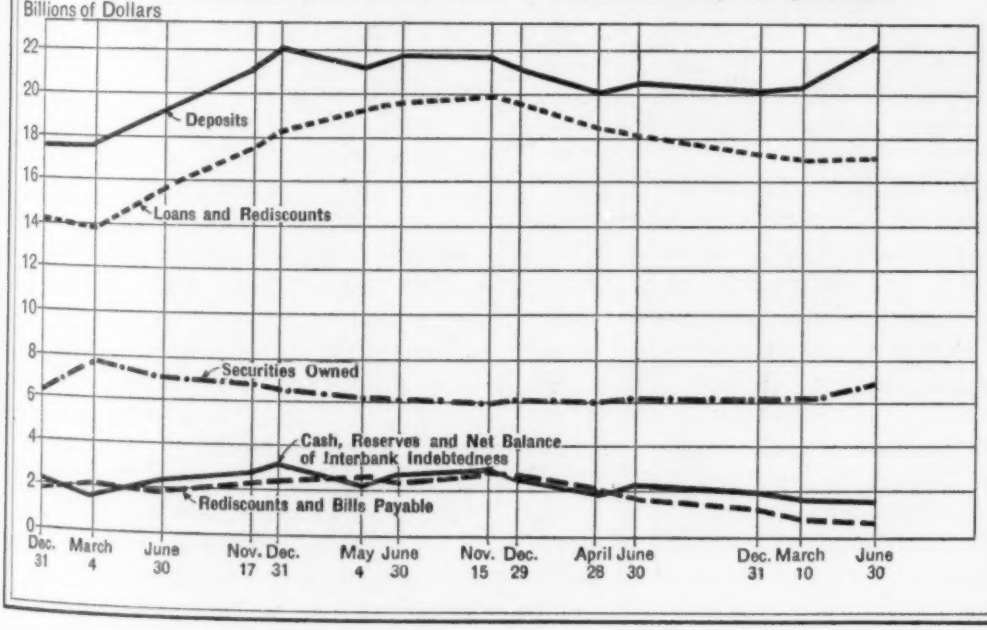
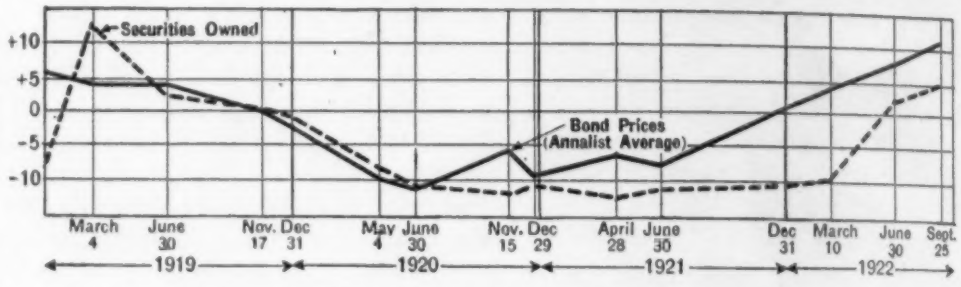


Chart II

Comparison of the Movements of Bond Prices with the Changes in the Volume of Securities Owned by the Member Banks of the Federal Reserve System



The scale shows per cent of deviation from the mid-point between the high and low figures for the period. For securities owned, O represents 6,911 millions; for bond prices, O represents $74.25. In charting the figures for bond prices, the mid-point was taken of the high and low for each week in which the banks reported their security holdings. The figure for securities owned on September 25, 1922 was estimated by ascertaining the proportionate increase recorded in the report of the smaller number of banks which report weekly.

fluctuating in price than are long-time bonds. It is improbable, however, that the increase of securities owned in 1922, which was coincident with a rapid rise in the price of bonds, consisted entirely or for the most part of short maturities.

Investment in Bonds versus Immediate Cancelation of Bills and Rediscounts with the Reserve Banks

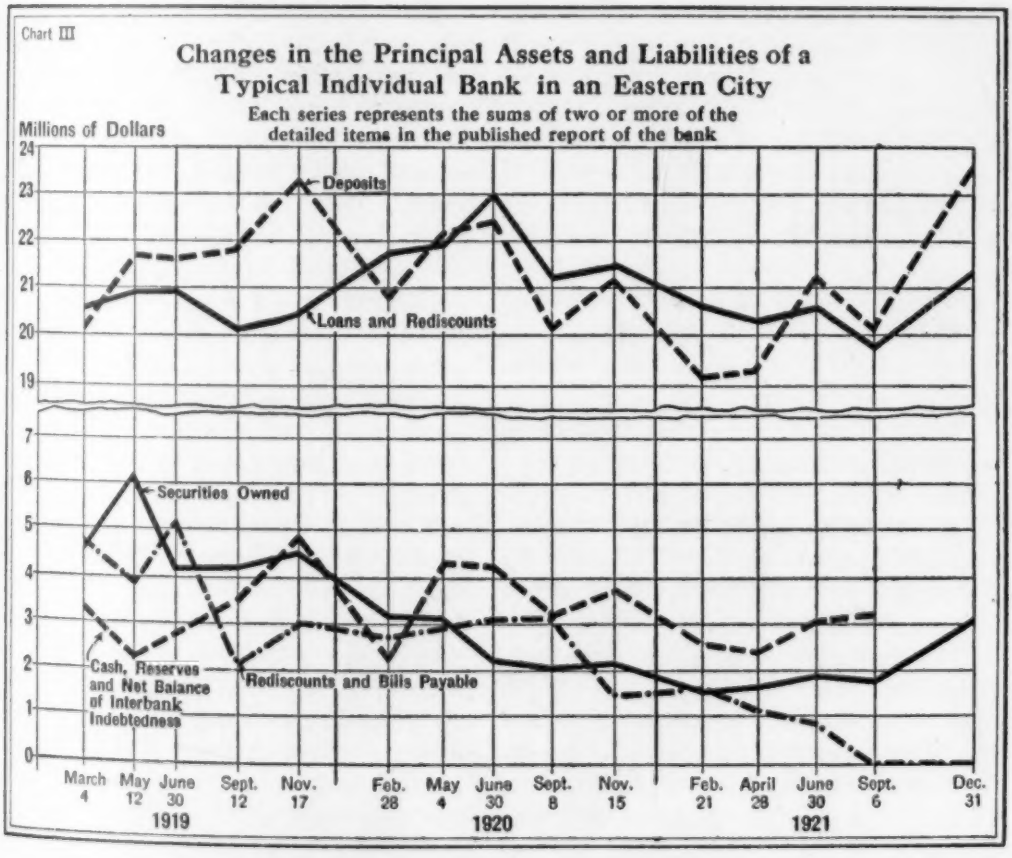
Because of a traditional practice of paying off indebtedness to other banks as soon as possible, the payment of bills payable and rediscounts with the Reserve Banks is considered the first outlet for surplus funds as they accrue to the member banks. Further funds are placed in securities, but in the recent depression their turn came after low yield and high price were characteristic of most high-grade bonds. Any banks which were not governed by the tradition of paying debts as soon as possible, found their policy profitable in 1921. They maintained their rediscounts more nearly at the 1920 level until the fall of 1921 or the spring of 1922 and meanwhile, with the surplus funds resulting from liquidation, purchased bonds at low prices. The interest yield was high, and the capital gain from a rise in price promised to be still more profitable. Indebtedness to the Reserve Banks could be canceled later by selling bonds or by using some of the funds which the last of the loan liquidation provided.

A concrete example may show more clearly the application of this policy. In this connection it should be noted that the times of changes in the deposit, rediscount, and loan accounts of an individual bank may differ from the times of changes in those items in the combined balance sheets of all banks. Changes generally occurred in eastern banks in advance of changes in the country as a whole. In considering an individual case, therefore, the movements of its funds are important rather than

the corresponding movements in the country as a whole.

The total loans and rediscounts of a certain bank in an eastern city reached $22,997,000 in June, 1920. They fell off $2,374,000 by June, 1921. Of this decline in loans, $1,029,000 was offset by a decrease in deposits, leaving $1,345,000 as the net addition to funds resulting from loan liquidation. During this period, also, the net balance of cash, reserves, and indebtedness to other banks dropped $1,172,000 and the volume of securities owned declined $442,000. A further fund of $333,000 resulted from a net increase in capital, surplus and undivided profits. Of the money from all of these sources, amounting to $3,292,000, all but $92,000 was used to pay off by June 30, 1921, all of the bank's indebtedness to the Federal Reserve Bank. In the summer of 1921 deposits declined more than loans, and more securities were sold to meet part of the difference. In the last quarter of the year, loans increased by more than a million and a half, but there was an increase in deposits of twice this amount. The resulting surplus funds were mostly placed in new securities. The changes in these items are illustrated in Chart III.

The *Annalist* average of bond prices at the end of 1921 ranged around 75, and the high point in the following year was about 82½. Fortunately, the liquidation of loans by this bank and the revival of its deposits occurred suffi-



ciently early to enable it to repay its borrowings and then to enter a comparatively low bond market. In the case of most banks a similar degree of liquidation was not reached until the spring of 1922. If this bank, however, had retained the securities which it sold after the bottom of the bond market was reached, and if it had purchased more in the spring of 1921, it could have taken advantage of the entire rapid upswing which began in June, 1921, instead of entering it for the last lap. The profit would have consisted of a relatively high interest yield plus a maximum capital gain of possibly 20% if the *Annalist* average is taken as a fair index. From this sum the cost of rediscounting would have to be deducted. If one-third of the rediscounts had been paid instead of all, the securities account in June, 1921, would have stood at $4,000,000 instead of $2,000,000. The remaining debt to the Federal Reserve Bank could have been canceled in the fall and winter of 1921 by the last of the loan liquidation and by selling some bonds at profitable prices.

Criticisms of Buying Bonds with Rediscounts

This policy of postponing the cancelation of rediscounts is open to two criticisms. The first is the undesirability of speculation by banks. The second is the more practical one that the Reserve Banks might stop the practice if it were widely attempted.

The first duty of a commercial bank is to meet the requirements of its business customers. If purchase of securities interferes with its ability to accommodate customers, there is ample reason to condemn it. The purchasing policy discussed in this article, however, concerns only that part of the down-swing of the cycle when business requirements are diminishing. If it is planned to cancel all rediscounts during the latter part of the depression and the beginning of the succeeding revival of business, there is nothing in this policy to curtail the ability of a bank to meet demands for loans, since its Reserve Bank account will be clear when the demand for loans begins to increase. Furthermore, it is only suggested that the securities, which are ordinarily bought when a surplus accumulates, be purchased some months earlier, but in no greater volume than at present. There would be a problem in deciding the best time to sell, and probably some difficulty in selling, if securities were held till after the peak of the bond market was reached; but these difficulties exist at present and will continue as long as banks use the bond market for temporary investments. The problem would not be affected by the fact that bank purchases of the same securities were made at a different time, except that the earlier demand by banks for bonds might cause the top of the market to be reached sooner.

A more serious objection to the purchase of long-time bonds is the inability of banks to foresee changes in credit demands and in bond prices during a coming depression. It is much easier to discuss this policy in relation to a past period than to apply it to a future one. It is impossible to judge accurately, when the bottom of the market is reached, how much it is safe to invest, and when prices are at their peak. There is a general sequence, however, that may be expected to repeat itself. In a period of money scarcity, bond prices are low. After a decline in bank loans is well under way, the money market becomes easier and bond prices advance. This advance continues until

money rates again stiffen under the stimulus of renewed demands for bank credit. A poor attempt to use this sequence as a basis for bond buying is less speculative than the present practice of buying when prices are high, merely because surplus funds are available.

It is true that some bankers can pursue this policy successfully, while to others with less experience and good judgment in bond buying the policy would be less profitable. It is safe advice, however, that all banks may buy securities in limited amounts in the first part of a period of business depression. In periods of liquidation, when surplus funds are increasing, many bankers fail to realize that the future holds promise of easier credit and tend to let their funds accumulate unnecessarily.

It has been shown that surplus funds are most plentiful when the bond market approaches the top and when bond buying is least justified. The reasonable practice at that time is to put funds into short-time maturities whose fluctuations are small in proportion to the changes in long-time bonds. Similarly, long-time bonds should be replaced wherever possible by notes and Government certificates in order to avoid losses from the wider downward movement in the value of the longer maturities which were previously purchased on a rising market.

Regardless of the merits, in the case of a particular bank, of purchasing bonds by using Reserve Bank credits, the policy is worthless if the Reserve Banks would prevent its practice. Aside from changing the rediscount rate which affects alike those banks which buy bonds and those which do not, except as the latter do not borrow so heavily, the Reserve Banks have no check on bond buying by their members except by refusing requests for rediscounts. The extent to which such refusals might be carried is not predictable. The attitude of the Reserve Banks, however, should depend upon the effect on general banking conditions if the policy were generally practiced.

A suggestion is here given concerning the probable effect of this practice on general banking, though a thorough economic analysis would be necessary for a final answer. The first result of the earlier entrance of banks into the bond market would be a quick recovery of bond prices, in contrast with the prolonged period of low prices and the slow advance during the recent depression. The purchase of bonds at low prices and their sale at high prices would tend to lessen extreme price fluctuations. An increased market for bonds at an early stage of the depression period would result in a more speedy funding by financially embarrassed businesses of floating debts incurred during the preceding period of active business. To a large extent the sellers of bonds would be paid in bank deposit credits, which would obviate the necessity of retaining the credit of the Reserve Banks except to provide reserves against the new deposit liabilities. The willingness of banks to buy bonds would tend to ease credit conditions and to lessen the severity of the deflation process.

To the extent that these results can be justly anticipated, the Reserve Banks should not oppose the use of their credit for moderate bond buying. Undesirable results would occur, however, if buying assumed too large a scale or if it were ill-advised so as to accentuate rather than even out price fluctuations. Yet, it is questionable whether the times at which bonds are bought by the majority of banks could be much more ill-advised than at present.

It is probable, furthermore, that this

policy would not be tried by many banks. Only those with superior investment judgment could realize the maximum profit. The greater the number of banks which attempted it, the smaller the profit would be to the more skilful because of the narrowing of price fluctuations. If it were found that large numbers of incapable banks were purchasing bonds unwisely, there would be opportunity then for the Federal Reserve Banks to check the practice.

LABOR TURNOVER COSTS IN A SHOE FACTORY[1]

IN the early part of 1921 a study was made of the problem of determining certain labor turnover costs in the plants of one of the large shoe manufacturing concerns in New England. Accurate data based upon performance were secured wherever possible; but when such data were not available, careful estimates from men of long experience were obtained. The figures herein presented, therefore, are not all mathematically accurate; but as suggestive of a method of approach to evaluate the costs of labor turnover these estimates are as effective as exact figures would be.[2]

For the purpose of this study all employees of the company were classified according to four general groups of operations: skilled, semi-skilled, unskilled, and clerical. All employees hired, moreover, were divided into the following classifications:

A. Inexperienced workers; i. e., men who have had no previous experience in a shoe factory
B. Workers with previous experience in a shoe factory but with no knowledge of the job to which they were assigned
C. Workers experienced on operations for which they have been hired; i. e., men who are either former employees re-hired or workers from other factories

Inasmuch as more accurate data and estimates were available for men in Class A than for those in B and C, a detailed investigation was made into the costs of hiring and training inexperienced employees.

The components entering into the costs of hiring and training inexperienced workers are:

A. Hiring Cost
B. Training Cost
   (1) Cost of instruction
   (2) Extra wear and tear on the machine during the apprentice period
   (3) Reduced production resulting in higher unit costs
   (4) Spoiled work

Hiring Cost

The hiring of employees is one of the duties of the employment department. The total cost of hiring in this company has been worked out on a weekly basis and consists of the following charges:

	Cost per week
(1) Personnel:	
Labor supply; procuring help	$40.00
Interview, placement, supervision	85.00
Clerical work and filing of records	45.00
Physical examinations	20.00
	$190.00

[1] Adapted from a graduation thesis prepared by Robert R. Haskell in April, 1921, at the Harvard Graduate School of Business Administration.

[2] Figures used herein are based on conditions in 1920. Wages, material, and all other costs are valued at their then existing price levels.

(2) Automobile expense:[3]	12.50
(3) Office Maintenance:	
Stationery	3.00
Rent, light and heat.....	2.00
Total	$207.50

The cost to the company in securing each new employee, including workmen who are re-hired, must be based upon the average number of "entrances" weekly during a period when a somewhat normal labor turnover exists. An analysis of the "entrances" during the last four months of 1919, selected as the period best able from the data available to represent a normal labor turnover, indicated a total of 875 men hired. On a weekly basis the number of employees hired would approximate 60. With a weekly expense of $207.50, the average cost of obtaining each new employee is about $3.50.

The nature of the employment records kept at this factory makes it difficult to differentiate the hiring cost as between groups or classes of employees. It is probably true that skilled labor is the most difficult to obtain; likewise, in normal times, semi-skilled and clerical help is more difficult to obtain than unskilled workers. It is, moreover, impossible to estimate losses in retarded production and in the maintenance of idle machinery and equipment which may accrue to the company because the employment department is unable to obtain a new worker promptly.

Cost of Training

Skilled Workers. In gathering training costs it was found possible to differentiate between skilled, semi-skilled, unskilled, and clerical help. As an example of highly skilled work, the operation of cutting upper leather was chosen. No inexperienced worker is permitted to assume the position of apprenticed cutter at once. In normal times a preliminary training as die boy is required for six months and as lining cutter for three months. Since over 90% of the work turned out in the cutting department is done on clicking machines, the study of the cost of training is confined to the machine operation.

The cost of instruction varies greatly, according to the natural skill and ability of the apprentice. A certain share of an instructor's time must be devoted to the new worker for at least six months. It was estimated that he must give 15% of his time for the first two months, 10% for the next two, and 5% for the last two. On the basis of a weekly wage of $40 for the instructor, the total cost of instruction amounts to $104. A second estimate of the cost of instruction in upper leather cutting was made in another plant of this same company and amounted to slightly less than $100. An average of these two estimates gives an instruction cost of about $100.

Additional wear and tear to the clicking machine from the operation of the apprentice is slight and is not borne directly by the manufacturer, because the machines are leased.

All estimates of the cost to the company because of decreased production must be based on the supposition that all equipment and floor space have active productive value when production is normal. On the basis of the amount

[3] A large proportion of the employees are hired in this company by means of the automobile. Complete records are kept of present and former employees as well as an adequate file of prospective workers. When in need of employees, reference is made to this file and the automobile is used to get in touch with prospective employees. This is the reason for the high expense of $12.50 charged to the cost of hiring by this particular manufacturer.

of leather cut by an inexperienced man during the first six months as compared with an experienced man, it was found that the inexperienced man was about two-thirds efficient. Accordingly, one-third of the overhead charges borne by the machine on which the new man works is a loss.[4] The charges for machine overhead for six months consist of rent, including building depreciation, which amounts to $6; heat and light, $3; and power, $25. Taking one-third of these figures, the respective amounts are $2, $1, and $8.50.

An extra charge should be added for an additional die boy to every thirty inexperienced workers; this amounts to $10 per worker for the period of six months. The additional cost due to the larger investment in dies because of the reduced output of inexperienced workers would be negligible and is given no consideration in the final estimate.

There is further an expense for clerical work which must be considered. Orders which an experienced cutter could complete are often too large for an inexperienced cutter to finish on schedule. Two cutters, therefore, are required to do the work. The cost of additional clerical work required to make out new cutting cards, as well as other extra work, might average $2.

By far the largest loss to the company results from the greater amount of spoiled work produced by the inexperienced man as compared with that of the experienced workman. It was estimated that during the first six months the loss from spoiled work would be 4% greater on the stock cut by the inexperienced workman. Actual figures from cutting cards substantiated this statement by showing a proportional loss of 3½%, which was considered low. From the figures worked out as to the value of the leather cut by the apprentice during the first six months, the loss resulting from spoiled work amounted to $450.[5]

The total cost of hiring and training an apprenticed upper leather shoe cutter, therefore, is distributed as follows:

A. Hiring Cost		$ 3.50
B. Training Cost:		
(1) Cost of instruction	$100.00	
(2) Wear and tear on machine	none	
(3) Reduced production:		
Loss in rent	2.00	
Loss in heat and light	1.00	
Loss in power	8.50	
Extra die boy charge	10.00	
Additional clerical expense	2.00	
(4) Spoiled work	450.00	573.50
Total		$577.00

Semi-Skilled Workers. The operation of assembling was selected as representative of semi-skilled work. It is confined to the lasting room and consists in getting together the box toe, counter, and upper, and in tacking these parts temporarily to the last in preparation for the lasters.

The instruction period extends over eight weeks. The operator requires approximately two hours of instruction daily for the first two weeks, an hour a day for the next two, and half an hour a day for the remaining weeks—48 hours in all. At 70 cents an hour for the instructor's time this amounts to $33.60.

Here again the machinery is leased, so that there is no charge for additional wear and tear. There is a reduced output, however, for a period of thirteen weeks. From a comparison of the records between experienced and new op-

[4] Since this operation is on a piece-work basis, there is little wage loss due to reduced production.

[5] This figure is based on leather at 30 cents a foot.

erators, it was found that the output of new operators averages only about 75% of that of the experienced operators. The loss attributable to reduced production, including rent, heat, and light, is figured at approximately $1.[6]

Since the operation is simple, little opportunity for damaging the shoe is presented. The work may be incorrectly done at first on account of the inexperience of the apprentice, but such work is done over at his expense. The cost of spoiled work during the apprentice period is estimated to be about $3.

The total cost of hiring and training an inexperienced assembly operator is distributed as follows:

A. Hiring Cost		$3.50
B. Training Cost:		
(1) Cost of instruction	$33.60	
(2) Wear and tear on machine	none	
(3) Reduced production	1.00	
(4) Spoiled work	3.00	37.60
		$41.10

Unskilled Workers. No experience or skill is required to be a sweeper, and this occupation is taken, therefore, as being typical of unskilled work. Instruction would probably require one half-hour of the foreman's time at a total cost of 50 cents. At the end of the first week, the sweeper is considered wholly efficient, and during the week he maintains about 90% efficiency. Since a wage of $20 per week is paid, the loss because of reduced production is about $2. Wear and tear on machinery, spoiled work, and overhead charges are not factors in this case.

The total cost of hiring and training a sweeper is estimated to be as follows:

A. Hiring Cost		$3.50
B. Training Cost:		
(1) Cost of instruction	$0.50	
(2) Wear and tear on machinery	none	
(3) Reduced production	2.00	
(4) Spoiled work	none	2.50
Total		$6.00

Clerical Workers. The cost of training a girl for the position of "enterer" in the payroll department is considered as representative of the average expense that must be incurred in training workers for a routine clerical position. The applicant for this position must possess a fair degree of intelligence and must have a three months' period of training before she is capable of doing the work efficiently. Definite instruction would extend over a period of ten weeks. During this period it has been estimated that approximately 60% of the working time of an experienced "enterer" must be devoted to such instruction. Since the instructor's salary is $16 a week, the actual cost of instruction in training an "enterer" is $96.

The average efficiency of the new worker is considerably below that of an experienced clerk. As a result of a study of the percentage of improvement shown by the new worker during the first three months, it has been estimated that she is on the average 56% inefficient during that time. Since the new clerk receives $16 a week, in three months she receives $195, of which approximately $110 is a direct loss to the company as far as production is concerned. The loss in overhead, including rent, building depreciation, heat, and light amounts to about $2.

There is little chance for spoiled work in a position of this kind. Mistakes made in sorting and arranging are analogous to spoiled work but can be

[6] *See* footnote 4.

rectified at the expense of additional labor. This expense, however, is included under the head of reduced production. Additional supplies and stationery, nevertheless, are necessitated by the mistakes of the apprentice, the cost of which amounts to approximately $3.

The total cost of hiring and training an inexperienced girl to be an "enterer" is as follows:

A. Hiring Cost			$3.50
B. Training Cost:			
(1) Cost of instruction		$96.00	
(2) Wear and tear on machinery		none	
(3) Reduced production:			
Added payment caused by reduced efficiency		110.00	
Loss in overhead		2.00	
(4) Spoiled work		3.00	211.00
Total			$214.50

Conclusion

The costs which have been given apply only to workers who have had no previous experience or training in shoe factories. For workers in classes B and C, namely, those who have had either general experience in shoe factories or specific experience on the jobs for which they have been hired, the costs of training would be less.

There are certain general and intangible costs which have not been considered in the above figures. On operations where the work is hazardous, it is undoubtedly true that the number of accidents among the new men is higher than among the experienced employees. Where the labor turnover is high, moreover, there is an additional cost resulting from the demoralizing influence which a constant influx of new men has on the organization. The demoralization may be so great that it will result in an inability to meet delivery dates, with a consequent loss in business and prestige.

As against the costs of labor turnover certain credits must be recognized. Where the wages paid the new worker are enough lower to result in a smaller direct labor charge per unit of product, the difference is a saving which helps offset the total charges attributable to labor turnover. A certain amount of new blood, furthermore, is good for any concern. If a man is promoted, the cost of training a new man to take his place may be considered as counterbalanced by the increased value of the promoted man in his new position.

In general the largest variables in training a new worker are the cost of instruction, spoiled work, and additional wear and tear to machinery. The cost of instruction depends on the degree of skill required for the job and the natural skill and ability of the man. It is also influenced by the kind of instruction and the ability of the instructor. The cost of spoiled work depends on the value of the material and the opportunity which the operation offers for damage. Additional wear and tear on machinery vary with the nature of the machines and tools used. The more valuable and complicated the machine the greater will be this cost. In the training of an upper leather cutter, for instance, the cost of spoiled work is the all-important item, whereas in training an operator for a highly developed semi-automatic machine the cost of spoiled material is ordinarily negligible as compared with the damage which a new man may inflict on the machine.

Although the estimates and data which have been presented relate to a specific company at a particular time, the methods used in arriving at the total costs are of general application.

CASE STUDIES IN BUSINESS

THE MAIL-ORDER POLICIES OF A DEPARTMENT STORE

THE volume of mail orders received by the Wellfleet Company, a large department store in an eastern city, has increased so rapidly that a reorganization of the mail-order department seems necessary in order to handle this part of its business efficiently. The mail-order business, which originated through the sending in of small orders for staple merchandise by regular customers away from the city for the summer, has been considered in the past as a service to the regular patrons of the store. Practically no separation has been made by the Wellfleet Company of its mail-order business from the regular business transacted over the counters in the selling departments. All orders are received in the incoming-mail office, sent to the mail-order office where they are recorded, and then turned over to the floor superintendents for distribution among the salespeople to be filled from the regular department stocks. No separate mail-order stocks of any kind are maintained.[1]

The fact that no one buyer or small group of buyers has charge of the stock from which the mail orders are filled makes it difficult to centralize the responsibility of having stock reserved for mail orders. Statistics for the past three years indicate that a large percentage of the mail orders received have not resulted in permanent sales. This is partially accounted for by the lapse of time between the insertion of an advertisement in the daily papers and the receipt of a mail order for the merchandise advertised, since customers living within the shopping radius of the store normally respond to an advertisement appearing in a Monday evening publication on Tuesday morning, while mail orders for this merchandise frequently are not received until Wednesday or Thursday, at which time the stock is often depleted. Unusually high returns might be expected, however, from mail orders because of the desire of the customer to have sufficient goods sent to permit some selection.

Although no special effort has been made to develop the mail-order business through advertising, some direct-mail publicity has been sent out periodically to regular customers in the form of small circulars to introduce new season lines and to announce special sales. Newspaper copy frequently has stated that all mail or telephone orders will be filled promptly.

The practice of having regular salespeople fill mail orders from regular stocks has led to ill-will on the part of the over-the-counter customer, since there is no reason visible to her for

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[1] If the merchandise requested is in stock, a sales slip is made out and the articles comprising the order taken to one of the wrapping desks where they are wrapped, tagged with an address label, and sent to the shipping room. A voucher, which is a portion of the sales slip, is detached from the slip, clipped to the original order, and returned to the mail-order office as proof that the order has been filled. If the merchandise requested is not in stock, but on order, the date on which receipt is expected is placed on the order, which is filed in the mail-order department and again sent through after the date specified for the arrival of the merchandise.

lack of attention from the saleswoman.

Under present conditions, therefore, dissatisfaction has resulted from the policy of filling mail orders directly from the regular stock; a large part of the merchandise is later returned as not satisfying the customer;[2] orders have been improperly filled because of the eagerness of the salespeople to complete the transactions; inattentiveness to customers on the floor has engendered a loss of good-will resulting from this division of attention; and finally, complaints have been made by salespeople that favoritism, frequently shown by floor superintendents in distributing the mail orders, has handicapped their sales records.

Several plans present themselves as possible solutions of the difficulties confronting the management of the Wellfleet Company. These plans fall into two groups, the first involving complete separation of personnel and stocks for the two types of business, the second including minor personnel and routing changes with mail orders filled from regular stocks.

Decision on the fundamental question of the purpose of the mail-order business, whether as a service to customers or as a sales promotion feature, seems necessary before determining the detailed methods to be used. Mail-order business in the Wellfleet store has developed as a service to customers. It is felt that this should continue to be the *raison d'être*. If the mail-order business is to be developed as a sales promotion medium, a point will soon be reached, if it has not already been reached, at which the store must stand ready to fill mail orders from separate stocks, both as a means of fulfilling its obligation to its clientele and of competing on the most favorable terms possible with large mail-order houses. Such competition would necessitate the issuance of large semiannual catalogs with fixed prices resulting for the duration of the current season, or until a supplementary price list could be sent out. Separate stocks would have to be maintained to insure proper filling of orders from the catalog.

Complete separation of the two types of business would permit the use of a separate corps of buyers specially trained for mail-order business, thus insuring an up-to-date and complete stock of staple goods and other merchandise particularly suited to the mail-order trade. The mail-order business could be carried on in a separate building away from the high-rent retail district, thus allowing more free space for the other activities of the store. The present congestion and the other difficulties previously mentioned would be eliminated, with the exception of returns, which would be minimized in so far as they are caused by inefficient filling of orders and not by the desire of the customer to have enough goods sent to permit some selection at home. Additional layout and personnel expenses would be incurred, however, and an increased division of the management's attention would be necessitated.

The stocks of the Wellfleet Company are of a nature in which the style element enters more heavily than with the average article carried by large mail-order houses. This style element would tend to make the articles advertised in the catalog out of date by the end of the season or would result in a reduction in value because of decreased style utility. This depreciation would

[2] During 1922, the percentage of returns to sales handled through the mail-order office had increased from 23.8% to 30%, while the returns on sales made to customers on the selling floor had decreased from 16.2% to 14.7%.

ordinarily be featured by price reductions in the store, but could not be brought to the attention of mail-order customers, thus causing a decrease in late season mail-order sales.

Furthermore, ill-will might result in the case of clients who deal both by mail and over the counter, because of the apparent inconsistency in prices for the same goods in the catalog and in the store. Such inconsistency would put the store on the defensive and might injure the prestige of the Wellfleet Company.

From a financial standpoint the use of separate stocks and semiannual catalogs would seem inadvisable. Once a price had been published for an article, the store would be obligated to fill orders at this price until supplementary notice of revisions could be given to customers. When prices were changing rapidly, the expense of supplementary price lists would be almost prohibitive. Such supplements would probably be necessary at the end of the season when the style utility of the merchandise had decreased and mark-downs were being taken in the store, if the mail-order business were not to suffer a heavy decline.

The question of stock-turn seems fundamental in comparing the business of department stores and mail-order houses. The former endeavor to buy frequently and secure rapid turnover. Successful operation of this plan permits constant adjustment to meet market conditions. Mail-order houses, on the other hand, plan a season's requirements and secure stocks at prices current at the beginning of the season to fill these requirements.

The style element mentioned above would make it necessary to take almost prohibitive inventory risks if the mail-order house method were to be followed. Pre-season purchases in style lines of all requirements for the season would result in heavy losses if the style cycle should be as short as it was in the recent case of tweed suits, for example. It seems, therefore, that as far as possible the same general plan would have to be followed in buying for mail-order as for store sales. In a period of rapidly rising prices the store would be unable to keep catalog prices up to date and would therefore have to sell at a loss. In its over-the-counter business the store is able to take mark-ups as market conditions warrant. In a period of falling prices mark-downs can be taken in the store, but the printed catalog price would result in loss of mail-order sales because of maladjustment between the catalog price and current market prices. It seems, therefore, that the store would lose money on sales on rising prices and lose volume of sales on falling prices, thus making mail-order sales from separate stocks and semiannual catalogs undesirable.

Mail orders were accepted originally as a service feature of the store, but the separation of stocks would mark a distinct change in the aims of this business. Efforts to build mail-order business would not encourage purchases over the counter in preference to mail orders. When a customer visits the store, she is subject to the appeal of attractive merchandise displays and may make heavier purchases than had she ordered by mail. Then, too, she has the privilege of inspection at the point of purchase and is thus further assured of satisfaction, while the store is assured of a lower percentage of returns.

It seems inadvisable, therefore, for the Wellfleet Company to carry separate stocks or to encourage mail-order

business as a means of sales promotion, with the resulting competition with large mail-order houses in their own field. It should continue to carry on mail-order business only as a service to customers who are unable to come to the store.

It might be argued that the trouble would be removed at its source by the complete elimination of the mail-order department. Though this proposal would eliminate the problem, it seems inadvisable because in meeting the wants of invalids, convalescents, and regular customers absent from the city on vacations or for other reasons, the mail-order department of the Wellfleet Department Store is rendering a legitimate service to customers. The removal of this service, therefore, would probably cause dissatisfaction among many of the customers. In addition, it would diminish sales and discard the benefits accrued by past development, investment, and experience.

The question, then, comes down to one of internal methods by which mail orders can be filled from regular stocks at a minimum of congestion and dissatisfaction. The use of a special shopping bureau, whose duty would be the filling of each individual mail or telephone order, might be a means of improving service to customers and increasing the efficiency of the department. These shoppers would act as regular over-the-counter customers, taking their turns to be waited on by the regular sales force. This would insure a more intelligent selection in the filling of orders, thus tending to decrease returns and to eliminate some of the dissatisfaction which exists among the salespeople. In addition, it would provide a valuable advertising feature from the standpoint of service to the customer and would avoid the danger of ill-will from inattentiveness to the regular over-the-counter customer since there would be an obvious, visible reason for the delay. On the other hand, the cost would be prohibitive, since the number of orders which could be filled in a day would be limited and the expense of such a bureau would be superimposed on the regular sales expense. Furthermore, such service would tend to place a premium on mail-order sales and would not tend to encourage purchases over the counter when possible. It appears, therefore, that the use of a special shopping bureau is not advisable as a means of handling mail-order business.

The following plan seems to offer the greatest relief from present difficulties. Orders would be received as at present and turned over to the mail-order office. After being recorded, they would be sent to the selling departments by a member of the mail-order department on scheduled trips. At the selling department the orders would be given to one person in the department especially delegated to handle mail orders. This would most naturally be the head of stock for the department, since she is the one most familiar with the stock and therefore the best able to fill orders to minimize dissatisfaction, and since her duties are such that she can fill mail orders in a manner to avoid obvious inattention to customers on the floor. The present method of sales slips would be used, the head of stock making out the sales slip and voucher and sending them with the goods to a central wrapping desk for the floor. The goods would be held here until the next trip of the mail-order department representative at which time she would inspect the goods, compare them with the order, and if satisfactory approve the shipment, tak-

ing with her the voucher for the mail-order department to complete the records in this department. Having been approved, the goods would be wrapped and shipped by the regular wrapping and shipping organization of the store. If the selling departments were unable to fill mail orders satisfactorily because of the time interval elapsing between the advertisement of the goods and the order, it might be advisable for the buyer to be required to hold back a small portion of his stock for the filling of mail orders. Such reservation should, of course, be determined by a careful study of the records to show the time interval to be expected and the reserves needed for the mail-order business. This plan would tend to relieve the present difficulties and seems the most logical one if the store is to continue to fill mail orders as a service to customers and not as a means of sales promotion.

It must be remembered that the shopping appeal is very strong with women and, therefore, if the Wellfleet store does not deliberately foster its mail-order business, a large part of the difficulty should be avoided. Exclusive mail-order advertising should not be done. Such mention as is made of mail orders in the general advertising should feature the desirability of personal selection, if possible, but the importance of prompt ordering if a personal visit to the store is not convenient.

In conclusion, it is recommended that the Wellfleet Department Store should not attempt to increase its mail-order business as a means of sales promotion, with the consequent necessity for separate stocks and catalogs; that it should reorganize its internal procedure as outlined; and, above all, that it should keep to its own field of department store merchandising, working for rapid stock-turn and filling mail orders only as a service to customers for whom personal visits may be inconvenient for one reason or another. In this way, it is felt that satisfactory service may be given to customers and at the same time an embarrassing growth of mail-order business, which would call for much more drastic action, may be avoided.

THE UTILIZATION OF AN ACQUIRED COMPETITIVE BRAND

THE Fond du Lac Company, one of the largest canned milk manufacturers in the United States, concluded in 1921 to launch a program of national publicity through color pages in the *Saturday Evening Post,* billboards in one hundred cities, and newspaper advertising in a few markets. All its product had been sold under its own brand—Laurel Milk—and distributed by wholesale grocers and chain stores.

The prestige of Laurel Milk had been established primarily in the Central West and Southwest, with relatively small distribution in the New England and Middle Atlantic states. The Fond du Lac Company needed additional milk supply for its well-known brand of Laurel Milk, the demand for which was to be increased by means of the national advertising.

Early in 1921 the Fond du Lac Company acquired from a competitor four additional plants located in Pennsylvania and New York. The low freight rates from these newly acquired plants

to New England and the Middle Atlantic states promised to afford a strong advantage in developing business in that northeastern territory. These acquired plants had been distributing a directly competing brand — Quaker Milk—which was of practically the same quality and sold at about the same price as Laurel Milk. Some trade prestige had been established for the Quaker brand in New England and the Middle Atlantic states. In perhaps a dozen markets in Pennsylvania this brand had fully 100% distribution in retail stores; in several other markets there was 50%, and in still others, 25% distribution. At the time of purchase, competitors of both brands were prophesying to those wholesalers who were loyal to the Quaker brand that sooner or later the manufacturer of Laurel Milk would fail to support or would discontinue entirely the Quaker brand; at the same time competitors were urging them to stock other brands of condensed milk.

The acquisition of the Quaker plants, for the purpose of increasing available sources of supply for Laurel Milk, necessitated the formulation of sales policies to govern the disposition of the acquired Quaker brand which would permit the utilization, not only of these plants, but also of the existing prestige for Quaker Milk in developing potential markets to the greatest advantage to the Fond du Lac Company's premier brand, Laurel Milk. The Fond du Lac Company was forced, therefore, to decide which of the following alternative methods of handling the Quaker brand would be most effective in establishing Laurel Milk in accordance with the advertising and sales plans already adopted:

1. To continue full sales pressure on the Quaker brand
2. To use missionary salesmen, but to discontinue advertising
3. To discontinue all sales efforts, but continue to fill mail orders
4. To discontinue Quaker Milk entirely

The Fond du Lac Company decided on the following plan which was put into execution. Laurel Milk was to be pushed aggressively by national advertising and salesmen. Sales efforts on Quaker Milk were to be discontinued, but orders from dealers to meet existing demand were to be filled until such time as the total output of all plants was required to meet the demand for Laurel Milk.

Analysis

It seems that the fundamental problem facing the Fond du Lac Company was neither one of production nor of internal sales administration, but rather was a question of the effect on the consumer and the consequent reaction on dealers. Possible alternatives, therefore, must be considered from the viewpoint of deciding the merits and demerits of the marketing of two competing brands by the same company, and the best way to avoid consumer confusion and consequent dealer prejudice in the utilization of both brands to the best advantage.

The line of least resistance would seem to have been to maintain both brands, pushing each in the territory which then furnished the best distribution. This policy would have tended to nullify competitors' arguments for the present and would have held the wholesalers' loyalty. Consumer and dealer acceptance had been established for the Quaker brand in the northeastern territory. Since it would have been

difficult to substitute an unknown brand immediately for a familiar one, the good-will of Quaker Milk could not have been transferred at once in that territory to the Laurel brand. The same amount of sales energy probably would have shown greater results in attempting to increase current momentum of the Quaker brand than in endeavoring to divert orders from it to the Laurel brand and thus transfer prestige and good-will. This plan, however, would have been shortsighted and would have militated against the success of the national advertising of Laurel Milk, for the two brands were directly competitive. The Fond du Lac Company, furthermore, would need the output from its new plants to meet the expected demand for Laurel Milk.

Aggressive sales work on both brands in the northeastern territory would have minimized competitors' arguments and would have continued to capitalize Quaker prestige. Inasmuch as the two brands were competitive, this plan, while holding Quaker good-will, would have entailed heavy expenditure in sales promotion and would have engendered confusion in the minds of the consuming public.

The use of a family trade-mark or similar method of identification for both products would not have been practicable because the two brands were directly competing; it would have caused confusion among consumers and weakened the prestige of each brand without any compensating gain. Such a device had been applied successfully to a diversity of allied, but non-competing products, to confer on all products so marked the trade prestige of the leaders in the line. These plans were therefore inadvisable; they merely would have postponed final settlement of the problem and would have been contrary to the aims which actuated the purchase of the plants.

The opposite extreme would have been to discontinue the Quaker brand entirely, concentrating all sales efforts upon Laurel Milk. This, to be sure, was the ultimate aim of the Fond du Lac Company and would have offered the best possible coordination with the advertising plans, since it would have eliminated all confusion among consumers and dealers and would have settled the matter once for all. It would not have been advisable, however, since it would have entailed the sacrifice of existing prestige for Quaker Milk before the Fond du Lac Company had been able to establish satisfactory relationships with distributers. Such a plan would have been too abrupt a break and would have left too advantageous an opening for competitors. It would have caused ill-will among distributers because of the existing consumer demand in some sections which they would have been unable to meet. It seems, therefore, that some plan was necessary which would permit a gradual transition period between past conditions and the attainment of ultimate aims.

The Fond du Lac Company, as stated above, decided to discontinue all sales efforts on Quaker Milk, at the same time filling mail orders from dealers who needed the product to meet an established demand. In this way the good-will of Quaker dealers was not jeopardized, since their supply was assured as long as they needed it to maintain the good-will of their customers.

The company was justified in expecting that the demand for Quaker Milk would fall off as rapidly as the demand for Laurel Milk in the northeastern territory was increased by national advertising; even a thoroughly advertised

article with firmly established consumer demand cannot expect to coast for long on the momentum gained in the past.[1]

There may have been some loss in the shifting of demand from Quaker Milk to the Laurel brand, but the plan tended to transfer the Quaker goodwill among dealers to Laurel rather than to outside competitors. It avoided the waste in supporting Quaker Milk in eastern markets during the period while Laurel Milk was gaining its foothold. Of primary importance, moreover, was the fact that this decision of the Fond du Lac Company coordinated its entire brand policy with its national advertising plans.

REVIEWS OF BUSINESS LITERATURE

Edie, Lionel D., editor. THE STABILIZATION OF BUSINESS. *New York: Macmillan, 1923. 400 pp.....$2.50*

"THE Stabilization of Business" presents in nine short articles by as many authors a view of the ups and downs of industrial and financial activity from several different angles. The contributors, each an authority in his field, discuss the history and development of their topics and endeavor to point the way to greater stability. Mr. Wesley C. Mitchell, the author of "Business Cycles," introduces the subject with an outline of his theory and with a summary of the problem of the business cycle. Then, after various aspects have been studied, Mr. Henry S. Dennison shows us how in a measure the problem has been tackled.

All of the writers take the cyclical movement for granted and each makes recommendations to modify rather than to eliminate the waves altogether. The several theses developed are largely repetition of what has been written before, either by the contributors or by others. For example, the second article in the book, "Stabilizing the Dollar," is a short summary of Professor Irving Fisher's theory of a compensated monetary unit. Mr. Andrews' section on public works also is little more than a history of what has been done toward putting into use an age-old theory of leveling out construction.

The other writers include Professor Frank H. Dixon, who outlines present-day transportation conditions and suggests a remedy for some of the existing inefficiency; Professor John R. Commons, who gives a history of unemployment insurance and discusses its merits; Professor E. R. A. Seligman, who presents the foreign trade and monetary difficulties in a compact and penetrating manner; President Walter Dill Scott of Northwestern University, who discusses the social desirability of the right man for the right job; and the editor, Professor Lionel D. Edie, who under the heading of "The Coordination of Production and Marketing" takes up cost accounting, labor efficiency, the collection of statistics and their interpretation, and shows the desirability of working them all into an effective business policy.

References abound, and on the whole the book is an excellent collection of material and of theory. It is a book which should appeal to the business man and which should furnish him with ideas for leveling out his own peaks and for formulating his opinions on questions of public policy.

Huebner, S. S. THE STOCK MARKET. *New York: Appleton, 1922. 496 pp.....$3*

ALTHOUGH Professor Huebner's latest book, "The Stock Market," takes him rather far afield from the subjects of his previous books on insurance, the work embodies the conclusions reached in teaching the subject for seventeen years at the University of Pennsylvania.

The volume gives a comprehensive and non-technical description of the services of the organized stock markets to individual investors and to financial and business enterprises. Not only does the reader gain a clear understanding of the principles and practices of the organized stock markets and the legitimate ways in which they may and

should be used, but also he obtains a vivid picture of the numerous, far-reaching influences on the business interests of the country. The analysis of the economic functions and the explanation of short selling, arbitrating, and speculation are especially noteworthy. There is a brief discussion and summary of factors influencing security prices, but because of the limited space available the treatment is too superficial to be of value to anyone desirous of making a serious study of this phase of the subject.

Two points of view are apparent throughout the book. First, each standardized practice and service of the organized markets has been analyzed carefully to determine its economic value to the community. All persons who from lack of knowledge believe that for the most part the stock market performs no function but to offer a legitimate means of gambling will find the truth presented to them in an unbiased manner. Secondly, there is constant reference to the legal aspects of relationships of all parties connected with transactions on the stock market. One section of the book is specially devoted to a brief history of legal cases which are of significance to such parties.

The book should prove both interesting and useful not only to students of the subject but to all persons who desire to understand more completely the machinery by which stocks and bonds are bought and sold and the influences of the organized security markets on the business of the country.

Lincoln, Edmond E. APPLIED BUSINESS FINANCE. *Chicago: A. W. Shaw Company, 1923. 762 pp.....$4*

MR. LINCOLN, formerly of Harvard University and now with the Western Electric Company, has given us a book which attacks the problems of business finance from a new angle—that of the average-sized industrial or trading enterprise. This volume is the outgrowth of the study of a large number of concrete cases, some of which appear in the author's earlier volume, "Problems in Business Finance."

The large-sized industrial corporation and the public utility as such do not receive much attention, rather the discussion is of the typical concern. The author considers not only the commonly discussed methods of long and short-term financing but also those problems which arise daily in the administration of a business. Hence, a large share of attention is given to the financial aspects of purchasing, producing, and selling goods. These chapters should be of particular value to the purchasing agent, production manager, and sales manager.

In considering the borrowing of working capital the writer discusses the relations of the concern with the commercial bank and the commercial paper house. Financial statements and their interpretation are well explained. The importance of comparative financial statements of condition and financial standards is stressed. Throughout the book, frequent forms and statistical tables are used to support the discussion. The influence of the business cycle upon these problems is at all times kept in view. In this connection Mr. Lincoln has pointed out many lessons to be gained from the experience of the past five years.

This clearly written volume is primarily of value to the business man in that it gives its entire attention to his day-to-day administrative problems. The student of finance will find the book a positive contribution to the field and

well worth careful study. It distinctly earns its title of "Applied Business Finance."

Lippincott, Wilmot. OUTDOOR ADVERTISING. *New York: McGraw-Hill, 1923. 340 pp.* $5

IN view of the fact that advertising in the open air is the oldest form of written publicity, it seems strange that the field of business literature has not included a complete work on this subject prior to Mr. Lippincott's. Other works on advertising have given general outlines of outdoor advertising and have treated the subject somewhat cursorily in a chapter or two devoted to the subject. Mr. Lippincott has contributed a somewhat detailed description and analysis of the several forms of outdoor advertising, including posters; street-car cards; and electric, painted, and window display.

He describes the early uses of this type of medium, namely, indiscriminate and unstandardized posting of circus and other amusement publicity matter, which caused widespread opposition to outdoor advertising and threw it into disrepute. The influence of the World War on outdoor advertising is clearly shown and the manner in which the general level of such publicity was raised by the entrance of the best artists into this type of commercial work is explained. The war posters not only aided in the accomplishment of the public aims of the time but also brought about a familiarity with and acceptance of outdoor advertising in the public mind.

The author further shows how the indiscriminate use of this force and the unstandardized methods formerly in vogue are being eliminated by the standardization of sizes, methods, and rates, by outdoor advertising of companies which are members of the Poster Advertising Association. The various functions of such companies are described in detail and there is much actual information given as to costs, specifications, and manner of sale.

An interesting description is given of the pricing formula in use for determining the selling price of display bulletins. By means of this method a base price is figured on effective circulation determined by actual count. Discounts are then granted from this base price, depending on the impression value and the attention value. "Impression value" is ranked for each structure "according to the way it is set and the way it compares with a perfect standard." "'Attention value' is the gage of the opportunity a person has to read a bulletin, i. e., the degree of attraction that a bulletin has on the effective circulation." Mr. Lippincott's handling of this subject should go far in dispelling any existing supposition that there is no scientific procedure in the evaluation of outdoor advertising facilities.

The value in proportion to the cost is indicated by brief comparisons of all media. Statistical information is furnished which should serve as a valuable guide to anyone contemplating the use of outdoor advertising in preparing rough estimates of probable costs. The book is profusely illustrated.

While not exhaustive as regards detail, this volume should prove interesting and valuable to anyone who has an advertising message for the public, whether corner storekeeper or national advertiser.

Lyndon, Lamar. RATE-MAKING FOR PUBLIC UTILITIES. *New York: McGraw-Hill, 1923. 201 pp.* $1.70

A DISCUSSION of the methods for determining differential rates for the vari-

ous classes of consumers of utility services and a defence of the actual cost basis for the valuation of public utility properties are the features of Mr. Lyndon's book.

The rate structures of gas, electric, street-railway, and telephone utilities are considered separately. In their analysis the importance of standing charges entailed by the maintenance of plant and organization in instant readiness to serve the consumer is pointed out and the relatively high cost of services rendered spasmodically or during the peak load period in comparison with that furnished continuously or during off-peak hours is indicated. The varying ability of different classes of consumers to pay rates when fixed on the principle of "charging what the traffic will bear" is also considered. By weighing these several factors the author derives methods and formulae for equitably distributing the total charges for services over the various classes of consumers while at the same time encouraging the maximum increase in business for the utility.

The actual cost basis of valuation is advocated in the chapters dealing with valuation of utility properties made necessary by rate regulation. The author argues that the security of principal and stability of return desired by the investors and stability of service rates desired by the utility patrons are threatened by revaluations at reproduction costs based on fluctuating labor and material markets.

The author has written an exposition of logical principles for rate-making rather than a digest of the precedents contained in court and commission decisions and the book consequently includes few citations from such decisions. For practical use in fixing rates which may become the subject of controversy it must be supplemented by works indicating the status of law on the subject.

McKinsey, James O. and Meech, Stuart P. CONTROLLING THE FINANCES OF A BUSINESS. *New York: Ronald Press, 1923. 638 pp.* $5

MOST writers on finance in the past have dealt primarily with what from the point of view of an individual business are the more spectacular external aspects of the subject—the methods and instruments used in securing funds for long-time financing from the public. Largely, probably, as the result of the scarcity of available material, they have failed to treat at any length the internal problems of the subject and even the external relations involved in short-term financing, which are usually of a more private nature than those involved in selling securities.

The authors of "Controlling the Finances of a Business" have seen the need and have endeavored to supply it. They discuss "the everyday problems of financial administration as they logically arise in the normal operations of a going concern," placing the primary emphasis on questions of an internal nature, although not neglecting those arising from external relations. Taking the point of view of the chief financial executive of a business, who is usually the treasurer, they group under four main heads the problems with which he has to deal: (1) those involved in determining the amount of capital needed; (2) those of securing capital as cheaply as possible; (3) those of controlling properly the investment and use of capital; (4) those of proper control of the profits arising from the investment and use of capital. Fixed and working capital are carefully distinguished in the discussion of each group of problems. The organization for financial administration is also considered.

As the title indicates, the idea of control is central throughout the book. The necessity of careful planning through a system of budgetary control embracing all departments of a business is emphasized as fundamental to a proper determination of capital requirements. "Financial planning," it is stated, "is the essence of financial administration." Emphasis is also laid on the value of a budgetary program in controlling disbursements of capital. Liberal use is made in this connection of material published in the senior author's earlier work on "Budgetary Control," a field in which he has done much valuable pioneer work.

The business cycle and the necessity and manner of considering it in connection with financial plans have a prominent place in the discussion.

The style is clear and concise, the arrangement of subject-matter is convenient and logical, and frequent summaries are helpful in emphasizing the important points.

BOOK NOTICES

Allen, Frederick J. THE SHOE INDUSTRY. *New York: Holt, 1922.* 415 pp. $4.

"It is the purpose of this study to give the nature, history, magnitude, operations and processes, employment opportunities and demands, earnings, and the probable future of the industry for those already in it, for other persons, and their advisers and teachers, who may be considering employment in this field of manufacture, and for all students of industry." The result of a first-hand investigation, this book will be useful both as a vocational guide and as a survey of the field.

Aspley, J. C. CLOSING THE SALE. *Chicago: Dartnell Corporation, 1923.* 125 pp. $1.10. Second edition.

This book, which represents the combined experience of numerous sales executives, aims to give helpful suggestions to young salesmen. Among the topics discussed are knowing when to close a sale, helping the buyer to decide, order blanks as an aid to closing, and legal phases of a sale. Arguments, which have been used successfully in overcoming a buyer's desire to defer ordering, are also given.

Aspley, J. C. HOW TO SELL QUALITY. *Chicago: Dartnell Corporation, 1922.* 111 pp. $1. Revised edition.

This is the fifth of the pocket "how" books brought out by the Dartnell Corporation. The material which it contains was gathered by members of the editorial staff from successful salesmen in various lines of business. The book is published to meet the needs of salesmen in the new era of price competition which we are just entering. It presents a résumé of methods successfully used by prominent salesmen to sell quality in the face of price competition of the keenest kind.

Bowers, John Hugh. THE KANSAS COURT OF INDUSTRIAL RELATIONS. *Chicago: McClurg, 1922.* 133 pp. $1.50.

The author, a resident in Kansas' labor storm center, endeavors to justify the Kansas Court of Industrial Relations and to present information concerning the court, its history and operation, and the attitude of the people of Kansas toward it. The right of the state to adjudicate industrial disputes is considered and defended. Professor Bowers concludes with a plea for a Federal Court of Industrial Relations.

Calder, John. CAPITAL'S DUTY TO THE WAGE EARNER. *New York: Longmans, Green, 1923.* 326 pp. $2.25.

This book is a manual of principles and practice on the handling of human factors in industry. In writing for employers and executives, as well as for teachers and students of management, the author expresses his belief that mutual understanding will be attained if capital and industrial management will conscientiously separate fact from fancy, in regard to labor problems, in their own minds and in the minds of their agents and workers.

The author emphasizes the fact that there is striking similarity in the wants of the pub-

lic, of capital, and of labor—a similarity which can fail to produce cooperation only when the parties involved insist on pursuing a purely selfish course. The public desires five things in industry: stability, adequate goods and services, competent leadership, some control in emergencies, and progress. Capital desires the same five things in terms of security of investment, adequate production, good management, sufficient control of conditions affecting the risk, and expansion. Labor's wishes, very similar and obviously to be obtained only if the results desired by the public and by capital are forthcoming, include a steady job, adequate wages, a good foreman, individual and collective voice about conditions, and a chance to rise.

As a means of securing real cooperation, the author advocates "home rule" within each plant through the agency of effective employees' representation organizations. Efficient organization can be achieved only if there is joint representation of management and labor with free discussion regarding every employee interest and definite power of decision; likewise, there must be free admission of Union men to membership and the terms of the plan must be changeable at the will of the majority. The complete plan of employee representation of Swift and Company, which has functioned successfully for several years, is given in the appendix.

Chatburn, George R. HIGHWAYS AND HIGHWAY TRANSPORTATION. *New York: Thomas Y. Crowell Co., 1923.* 472 pp. $3.

Mr. Chatburn opens his discussion with several chapters upon the history of transportation in the United States, tracing the progress of transport as the measure of civilization from the inland waterways to the modern motor car. While automotive transportation is his particular interest, he emphasizes the fact that railroad and motor car each has its sphere of greatest efficiency; in support he presents a formula for calculating economical trucking distances. Other chapters include the planning of highway systems, methods by which they have been financed and an analysis of their effect on production and marketing. The subjects of accident prevention and highway posting are introduced. With the extensive bibliographies at the end of each chapter, the work becomes an interesting and important one for the research worker as well as for the lay reader.

Cook, Allan B. FINANCING EXPORTS AND IMPORTS. *New York: Ronald Press, 1923.* 217 pp. $2.50.

In the preface to his book the author states that it is his aim to give a "comprehensive understanding of the practical problems inherent in the financing of foreign trade" from a mercantile as well as a banking point of view. The work divides itself into three parts. The first seven chapters comprise a somewhat rambling discourse on terms and theoretical background. The second seven chapters give a detailed explanation of the various credit instruments which can be used in foreign trade; first from the point of view of the importer and then from that of the exporter. The last five chapters take up a variety of factors affecting foreign trade, such as governmental interference, the effect and probable future effect of the Webb and Edge Acts, and finally a recommendation as to what the future course of the financing of U. S. foreign trade should be.

Since only the middle part of the work can truly be termed "practical," the preface is rather misleading; two-thirds of the book is given over to a discussion of theoretical and economic principles which are available in more detailed and inclusive form in all the better text-books on economics.

Cross, Ira B. DOMESTIC AND FOREIGN EXCHANGE. *New York: Macmillan, 1923.* 565 pp. $4.50.

The bearing of foreign exchange upon our international relationships has aroused keen public interest in the subject and accounts for the series of more or less valuable publications which have been appearing recently. "Domestic and Foreign Exchange" differs from the average book mainly in that it devotes its four opening chapters to domestic exchange. In this section are emphasized the benefits the Federal Reserve System has conferred on the country through its aid in the collection of checks at par and its system of telegraphic transfer of funds. The author expands the intricacies of foreign exchange in the usual manner and at considerable length, using a great variety of illustrations to clarify his meaning. The volume is designed for bankers, business men, and economists.

Elliott, L. E. CHILE TODAY AND TOMORROW. *New York: Macmillan, 1922.* 345 pp. $5.

In readable style the author presents a complete picture of this South American country —its physical characteristics, its history, its resources, its accomplishments, and its future possibilities. While the book is to be commended chiefly as a piece of general descriptive literature, those who are interested in Chilean trade possibilities will find in it much useful information, notably in the chapters on Mining, Agriculture, Forest and Woodland, Commerce, Transport Systems, and Finance, and in the sections of other chapters which deal with the characteristics and life of the people.

Frankfurter, Felix. A SELECTION OF CASES UNDER THE INTERSTATE COMMERCE ACT. *Cambridge: Harvard University Press, 1922.* 789 pp. $5. Second edition.

This is the second edition of a work originally published in 1915, which is revised to cover recent decisions involving both old and new legislation. The cases selected are presented under four main headings: (1) Scope of Commerce Regulated by the Act; (2) Duties of Carrier under the Act; (3) Functions of the Interstate Commerce Commission in the Enforcement of the Act; (4) Function of Courts in the Enforcement of the Act.

Gaines, Morrell W. THE ART OF INVESTMENT. *New York: Ronald Press, 1922.* 231 pp. $2.

The principles governing the investment of personal funds constitute the subject-matter of this book. The various types of business which offer investment opportunities are discussed. Booms, depressions, and business barometers are considered and an explanation is made of the catch phrases and formulae of investments. Consideration is also given, from the theoretical standpoint, to the types of dealers in securities. The book is of interest to all who desire to gain a knowledge of the fundamentals of sound investment.

Hoyt, C. W. TRAINING FOR THE BUSINESS OF ADVERTISING. *New York: George B. Woolson and Company, 1922.* 125 pp. $1.50.

Mr. Hoyt, in this brief sketch, attempts to furnish a plan to aid the novice in advertising (1) in understanding what advertising includes and (2) in preparing himself for this business. In line with the author's recognition of the importance of the fundamentals of marketing knowledge among advertising men, his training plan includes the gaining of experience in the following ways: retail selling, wholesale selling in several lines, study through night or correspondence courses, reading, small newspaper work, advertising manager for an advertiser, magazine representative and agency work. The appendixes include a miscellaneous mass of information of more or less interest to the prospective advertising man.

Jackson, J. Hugh. AUDIT WORKING PAPERS. *New York: American Institute of Accountants Foundation, 1923.* 201 pp. $5.

For all students of auditing, both those in accounting offices and those in universities and colleges, "Audit Working Papers" contains much of interest and value. Drawing upon his experience as a teacher and practical accountant, Mr. Jackson has endeavored to give an authoritative presentation of the technique of auditing.

No attempt is made to add to the discussion of the theory of auditing. The book does, however, fully cover its field, the practical methods of making an audit, and particularly the methods of presenting the information gathered throughout the audit.

Two appendixes contain material of real value to the young accountant. The first is a model set of working papers given in detail for a hypothetical corporation; the second contains a miscellaneous group of working papers useful in special situations. For those desiring to do additional reading on auditing or accounting, adequate references are presented.

Knauth, O. W., of the Staff, National Bureau of Economic Research. THE DISTRIBUTION OF INCOME BY STATES IN 1919. *New York: Harcourt, Brace, 1922.* 30 pp. $1.30.

Supplementary to two previous volumes upon the estimation of "Income in the United States," published by this Bureau, this volume essays to apportion the aggregate income of 1919 to the various states. Numerous tables are contained in the book, among them being Distribution of Non-Agricultural Incomes over $2,000, Distribution of Farmer's Income, and numerous summaries and analyses

of income. The method of estimation is also described. This study should be of value to those concerned in any way with the capacity of the states to buy goods and to absorb securities.

Koebel, W. H. ANGLO-SOUTH AMERICAN HANDBOOK INCLUDING CENTRAL AMERICA, MEXICO AND CUBA FOR 1922. *New York: Macmillan, 1922.* 888 pp. $7.50.

The scope of this volume, published by the Federation of British Industries, is wider than that of most of its kind. In addition to the usual commercial, financial, political, legislative, geographical, and historical information and the notes regarding currency, transport, and bibliography, details are included concerning the best means of traveling from one place to another, the hotels, and the various kinds of accommodation which are to be found.

While the book has been written primarily to serve the needs of persons who are established in Latin America, it will prove of special service to firms which contemplate entering into commercial relations with that territory. Travelers, who are visiting South America for the first time, will find in it a wealth of useful information.

Lightner, Otto C. HISTORY OF BUSINESS DEPRESSIONS. *New York: Northeastern Press, 1922.* 454 pp. $4.

The first half of the book presents a detailed history of business depressions, beginning in Biblical times. A chapter is given to each of the 19 major depressions in the United States since 1785. The material is interspersed with quotations and anecdotes. The latter half of the book is devoted to various phenomena entering into business depressions—the part they play and the various indexes of economic disturbances. The detailed incidents, dates, and figures destroy somewhat the continuity of the book and it is difficult to determine the underlying principles and the author's views.

Link, Henry C. EDUCATION AND INDUSTRY. With a foreword by George E. Roberts. *New York: Macmillan, 1923.* 265 pp. $2.

In this book the author presents his opinions on the relation between education and industry, based largely on his experience in charge of the educational activities of two industrial corporations. His aim is to show how, in its application to industry, education may be made more practical. The analysis is centered about the following questions: (1) What are the functions of industrial education? (2) How should the responsibility for industrial education be divided? (3) What methods in industrial education are the most practical?

The education not only of workers but also of executives, foremen, salesmen, and other important groups in industry is considered. The necessity of cooperation between industry and the public educational system is emphasized and the criterion of direct and exclusive versus indirect and distributed benefits is suggested as a principle for the division of responsibility for education between the particular company and the community at large.

MacVeagh, Rogers. THE TRANSPORTATION ACT, 1920. *New York: Holt, 1923.* 968 pp. $7.50.

This volume is a source book of information regarding the last comprehensive revision of the Interstate Commerce Act. The text of the new law is compared in detail with the provisions of the previous Act. Each group of related sections is followed by explanatory matter which includes for the most part extracts from Congressional speeches, committee reports, court decisions, and I. C. C. rulings. An appendix, comprising almost half of the book, contains full texts of related acts, other proposed bills, important I. C. C. decisions, and various public documents which concern government regulation of transportation.

Naether, Carl A. THE BUSINESS LETTER. *New York: Appleton, 1923.* 516 pp. $4.

Mr. Naether's book demonstrates his enthusiastic belief in the importance of the business letter and is apt to make his readers share his enthusiasm. To him, every letter is a sales letter intended to place the recipient in such a position as to make it difficult to make unfavorable response.

After elaborating his theories of letters in the first part of the volume, he devotes the second and larger part to a detailed study of examples of the many varieties of business correspondence. All the various types are included from those requesting information to

those on credits and collections. Each illustrates a principle and each receives comment and criticism which is helpful for the reader. Also included is a helpful chapter which presents and analyzes certain hackneyed expressions and suggests substitutes.

Peck, Annie S. INDUSTRIAL AND COMMERCIAL SOUTH AMERICA. *New York: Dutton, 1922.* 509 pp. $5.

In this book the author presents a brief description of each South American country as to area, history, government, population, education, press, religion, physical characteristics, states and territories, chief cities, ports and transportation, resources and industries. She also offers suggestions as to methods of developing and holding trade with South America. Appendixes give information about postal regulations, cable facilities, leading banks and steamship lines, and include a list of publications and periodicals.

The information presented, most of which is compiled from the publications of the various governments, gives in convenient form a groundwork of facts relative to South American markets.

Porosky, Mathew. PRACTICAL FACTORY ADMINISTRATION. *New York: McGraw-Hill, 1923.* 244 pp. $2.50.

The purpose of this volume is "to present the accepted principles of modern factory administration and to show how they may be effectively applied to actual operating conditions." The principles, practices, and forms which are given are presented from the point of view of the medium-sized rather than the exceptionally large manufacturing establishment. The book is addressed to executives who come in contact with factory operating problems and to students of factory and business administration in schools and business establishments. For the latter a series of questions is appended at the end of each chapter.

Read, James B. THE LAW OF SALES. *New York: Appleton and Company, 1923.* 229 pp. $2.

The purpose of this book is to enable business men to gain a preliminary knowledge of their rights and duties regarding contracts of purchase and sale. The provisions of the Uniform Sales Act regarding formation of contracts, conditions and warranties, transfers of title, negotiable documents, performance of contract, and breach of contract are explained in detail. The concrete illustrations and the non-technical language make possible the ready application of the law pertinent to an actual business situation.

Tosdal, Harry R. PROBLEMS IN EXPORT SALES MANAGEMENT. *Chicago: A. W. Shaw Company, 1922.* 702 pp. $5.

"Training for foreign trade should be fundamentally the same as training for domestic trade; though in the more specialized training, the examples and applications of general business principles should be made with reference to foreign transactions." The 164 problems in this book may be used as a guide in exactly this way. The book opens with a discussion of the field of export sales management. Chapter II contains problems on the export sales organization. The next section covers research and planning in export trade. Policies relating to the product, to distribution and to prices and terms are suggested by the problems in the next three chapters. Sales methods, the management of the export sales force, foreign branches, delivery, financing, credits and collections, and control are all brought to attention in turn by the problems. Each chapter includes a brief analysis and a careful outline of the phase of the subject covered therein.

Vanderblue, H. B. and Burgess, K. F. RAILROADS—RATES—SERVICE—MANAGEMENT. *New York: Macmillan, 1923.* 480 pp. $4.50.

Messrs. Vanderblue and Burgess have brought to the preparation of this book the experience and viewpoints of economist, student of transportation problems, lawyer, and railroad operator.

The book is divided into four parts. The first section deals mainly with the powers of the Interstate Commerce Commission and other regulative bodies and also shows the attitude the courts have taken in interpreting the law in regard to interstate commerce. Part Two does much to clarify the theory and practice of rate-making. The chapters devoted to the services performed by the carriers explain many points in connection with car distribution, the regulation of train movement, and a host of other subjects of which the average business man is ignorant. The

final section is devoted to railroad management. In it are brought out the dual responsibility of railway executives, first to the owners and second to the public, and the great difficulty of making these two interests harmonize. The authors also explain the difficult labor problems confronting the railways. Several chapters are spent on the credit situation of the carriers, the need for protecting the investor, and the method adopted in valuing the railroads. The book should appeal to business men, economists, and students.

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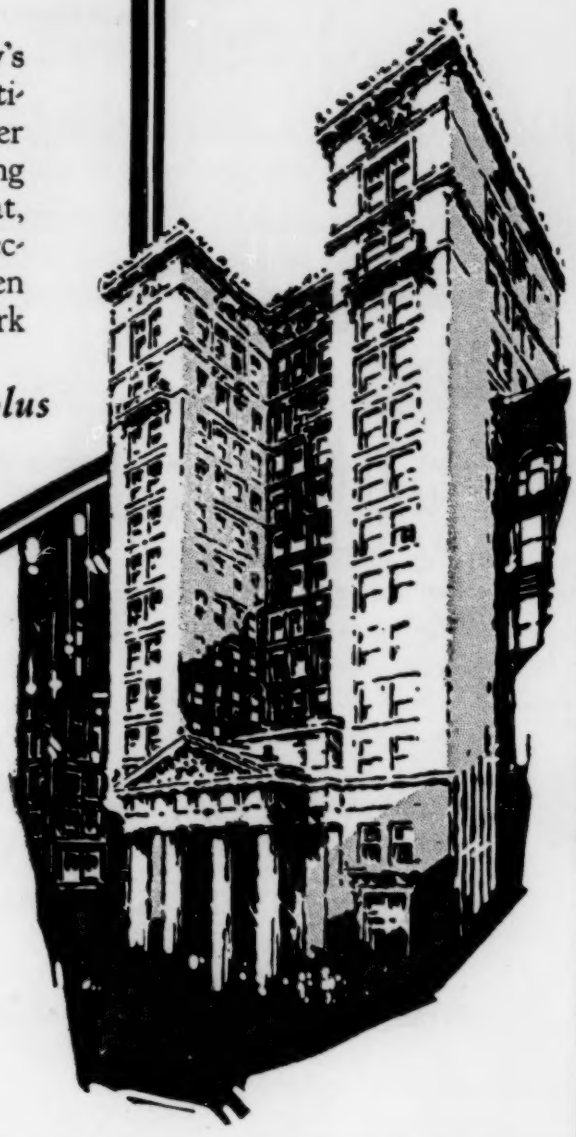

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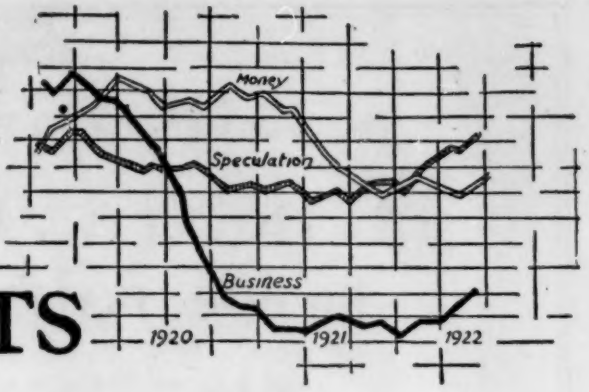

The Year 1923

Today you are making decisions which will have an important bearing on what your concern will make or lose during the coming year.

Will the advance in commodity prices and business activity which has been in progress since early 1922 continue throughout the present year? Or will this upward swing in business come to an end within the next few months?

Forecasts of Proven Dependability

The Harvard business predictions are based upon a new and scientific system of economic forecasting of proven dependability since the foundation of the Harvard Economic Service in 1919.

It forecast the tremendous boom of 1919 and the severe depression of 1920 months in advance of their occurrence.

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On the basis of this noteworthy record of performance the Harvard Index may be expected to forecast the next important turn in business by a sufficient interval to protect its subscribers against damaging and unforeseen changes.

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HARVARD BUSINESS REVIEW

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"Tom, Dick and Harry"

Calling attention to a too general lack of appreciation of Relative Values in Cost Accounting.

Tom, Dick and Harry are never permitted to make requisitions on bank accounts. Yet, too often, are they allowed to requisition stores, or, at times, just to take and use materials as they see fit.

The one or two percent cash discount on materials purchased is never lost sight of. Equal concern is seldom given to the fact that a physical count of the inventory shows a shrinkage of one to three percent.

In nine cases out of ten the inventory is the largest of all the current assets. The value of materials on hand is usually much greater than the cash in bank. Yet many concerns estimate their profits on a Cost System which permits of a shrinkage factor in inventory.

Accurate and persistent control of inventory on hand and unfilled commitments, is the safeguard against shrinkage or loss. It is just as important as accurate and persistent control of the bank account. It is simply a matter of recognizing *relative values*—adopting a Cost System which is based on *relative values*.

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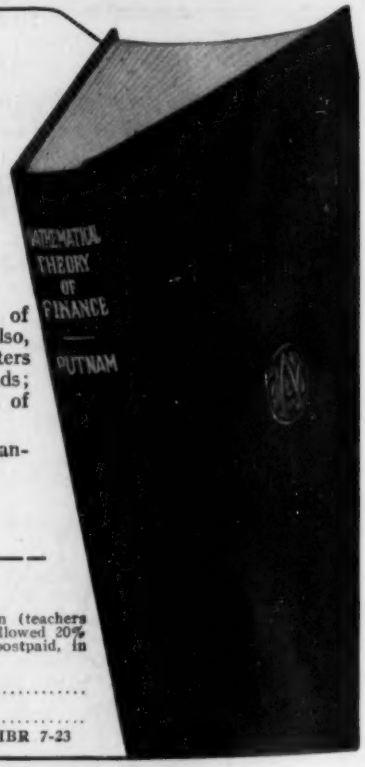

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HARVARD BUSINESS REVIEW

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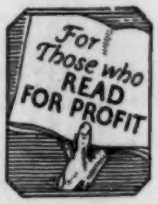

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Amory, Browne & Co. consider styling one of their most important obligations to the mills they serve. Correct styling depends upon close study of fashion trends, for some lines of cotton goods are styled a year before they appear in the stores. An interesting instance of correct forecasting is our introduction two years ago of ginghams with colored grounds, which today are shown in the lines of nearly every manufacturer of ginghams.

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No. 4 of a series

HARVARD BUSINESS REVIEW

The Trend of Foreign Trade

TRADE routes are shifting. Increasing quantities of basic raw materials are coming direct to us from producers in various parts of the world, instead of through European middlemen, as before the war.

Approximately half of our export trade at present consists of manufactured goods.

The colossal balance of trade in our favor is now approaching the more normal pre-war yearly balances.

The ocean-borne commerce of the United States increased more than 4,000,000 tons during the calendar year 1922, as compared with 1921. While our exports decreased 5,500,000 tons, our imports increased 10,000,000 tons.

These changing trends in our foreign commerce create new problems in financing that trade, and necessitate expert knowledge of world-wide business and financial conditions.

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